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MILITARY NOTES

ON

THE PHILIPPINES.

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INTRODUCTORY NOTE.

These notes have been compiled from the best available data, and while known to contain inaccuracies, it is believed that they can be readily amended as American reports are received. It is to be regretted that greater notice could not have been given the strictly military features. The notes are supplemented by the military map of the island of Luzon, prepared in the Military Information Division; plans of cities, and charts of bays, harbors, etc., taken from the publications of the hydrographic offices of various countries.

The following works and reports have been consulted and extracts from them freely made:

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"Chronicle and Directory of China, Japan, Philippines, etc.," 1894.

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"Travels in the Philippines," Jagor, 1875.

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Also information furnished by the Naval Intelligence Office and by Professor Moseley, of Ohio.

WASHINGTON, *September, 1898.*

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THE PHILIPPINE ISLANDS.

GENERAL.

The Philippine Islands form a great part of the vast archipelago lying southeast of Asia. They were discovered by Magellan in 1521, but it was not until 1564 that the group received its present name, in honor of Philip II. In many respects these islands are Spain's best possessions, due to the abundance and variety of products, numerous and good ports, character of inhabitants, and on account of the vicinity of certain countries of eastern Asia, which are now entering upon a stage of civilization and commerce. The group is composed of some 2,000 islands. Many of them are very small, but others are important on account of their size, resources, and population.

From the year of discovery until 1542 several expeditions from Spain attempted to gain possession of these islands, but all failed. In 1564 another expedition, commanded by Miguel de Legaspi, was dispatched and a footing established in Cebú; the headquarters were later transferred to Luzon, and in 1581 the city of Manila was founded.

Various attempts to drive out the Spaniards were made during the following years by the Portuguese, Dutch, and Chinese, but all failed. In 1762 Manila was taken and held by the English for a ransom of 1,000,000 pounds sterling. This, however, was never paid and the islands were finally returned to Spain.

EXTENT.

The archipelago extends from 5° 32′ to 19° 38′, north latitude, and from 117° to 126°, east longitude. It thus covers about 1,000 miles north and south and 600 east and west. (See index map, opposite page 1.)

BOUNDARIES.

On the north and northwest the islands are separated from China by the China Sea and the Indo-Chinese Peninsula. Toward the east is the Pacific. On the north a number of small islands stretch out toward Formosa; on the south, while

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a double connection is formed with Borneo by the lines of the Paláwan, Balábac, and Sulu islands, the basin of the Celebes Sea extends for a distance of 300 miles between its southernmost island, Mindanao, and the Celebes. Though forming quite a distinct group from Indonesia, from which they are separated by two marine abysses (one nearly 2,500 fathoms deep and the other over 2,500 deep), the Philippines are connected with the southern lands by three long ridges, partially covered by water. Of these the northwestern is the most regular and best developed. From Mindoro to the northwest point of Borneo, the deepest part of the sill (between Balábac and Bangney) does not exceed 25 fathoms. Balábac Strait, between Paragua and Borneo, is filled with reefs formed by the marine current, which, under the influence of the southwest monsoon, sets strongly toward the Sulu Sea. The second isthmus is formed by the Sulu Archipelago connecting the northeast point of Borneo with the western extremity of Mindanao. Here the shallow channel, through which there is communication from the Sulu to the deeper Celebes Sea, is traversed by a system of alternating currents, over 250 fathoms deep. East of the trough of the Celebes Sea, the peninsula of Minahassa with the Sanguir Archipelago and other islands form a third isthmus, sweeping around to the southernmost point of Mindanao. This ridge is broken by many openings, the broadest and deepest of which lies off the coast of Mindanao.

NUMBERS AND AREA.

The number of islands is not definitely known, but is variously estimated at from 1,200 to 2,000. New ones are being continually added to the maps. Some members of the vast archipelago, as well as the more remote districts in the larger islands lying beyond the direct control of the Spanish, have remained unexplored. Even the regions governed by the Europeans are still but imperfectly known, no methodical and detailed study of the Philippines having yet been made. Present maps and charts are extremely defective, except for the seaboard, in the survey of which the leading maritime nations have cooperated.

The principal islands are Luzon, Mindanao, Paláwan (Paragua), Samar, Panay, Mindoro, Leyte, Negros, Cebú, Masbate, Bohol, Catanduanes, Polillo, Marinduque, Tablas, Burias, and Ticao.

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Luzon, the largest, has an area of about 41,000 square miles; Mindanao, the next, about 37,500 square miles; and the five next in size have an area of over 10,000 square miles each. The most reliable estimate places the aggregate land area of the group at 114,356 square miles, or equal to the area of Arizona. Luzon, upon which the city of Manila is located, is equal in area to the State of Virginia.

COAST LINE.

The coast line of all the islands is very irregular and broken, the ocean cutting in and forming many gulfs, bays, isthmuses, and peninsulas. There are long stretches of canals and passages between the islands, but these are not always navigable. Although situated in the region adapted to the growth of corals, the scarcity of this formation is accounted for by the presence of volcanic fires and the occasional deluge of hot water, which prevents the growth of the polyps.

TOPOGRAPHY AND OROGRAPHY.

The whole surface of the Philippines is essentially mountainous, the only plains that occur being alluvial districts at the river mouths and the spaces left by the intersection of the ranges. The principal ranges have a tendency to run north and south, with a certain amount of deflection east and west, as the case may be, so that the orographic diagram of the archipelago, as a whole, has a similarity to a fan, with northern Luzon as its center of radiation. The three lines of partially submerged ridges, before mentioned, stretching from Indonesia toward the Philippines, running north and south, continue their main axis, and strike the southern part of the same region at the Saragani Volcano. East of this range is found a broad chain, occupying all the eastern section of Mindanao, which borders on the Pacific.

A general survey of the entire orographic system shows that, from the southern point of Mindanao to the northern extremity of Luzon, the relief of all the islands is either in a line with the southern isthmuses or parallel to them.

On the other hand the islands of Bohol, Cebú, Negros, and Panay are disposed in a line with, or parallel to, the Sulu Archipelago, while Mindoro and the main section of Luzon form the northeast extension of Paragua and Borneo. Most

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of the surface appears to be formed of old rocks, especially schists, and, in the north of Luzon, granite.

While none of the mountain peaks greatly exceed 8,000 feet in height, Apo, in Mindanao, is over 9,000 feet; Halson, in Mindoro, is over 8,900 feet; and Mayón, in Luzon, over 8,200. The latter is an active volcano, which has been the scene of several eruptions during the present century. Extinct or active craters are relatively as numerous in the Philippines as in the eastern archipelago, and as a consequence of these subterraneous forces earthquakes are frequent and violent.

In 1627 one of the most elevated mountains of Cagayan disappeared, and on the island of Mindanao, in 1675, a passage was opened to the sea and a vast plain emerged. The more recent of the convulsions occurred in 1863 and in 1880. The destruction of property was great, especially in Manila.

The island of Luzon is traversed by the great ridge of the Caraballos Mountains, the principal points of which are Lagsig and Cabalesian. The ridge is divided into three branches. The first, denominated Caraballo Central, or del Norte, separates the provinces of Nueva Vizcaya and Ilocos Norte from those of Cagayan and Abra, and terminates at the China Sea. To this branch belong the mountains Alipapu, Alumbubunig, and Posdey. The second, beginning at Caraballo de Baler, running in a northeasterly direction and terminating at Cape Engaño, is the most important ridge of the whole archipelago. The volcano Cagua, with an altitude of 2,632 feet, belongs to this ridge. The third branch is the western one. It runs toward the south, separating the provinces of Nueva Écija and Laguna from the districts del Príncipe and Infanta, and it stops at the strait of San Bernardino after having traversed the territories of Tayabas, Camarines Norte, Camarines Sur, and Albay. The volcanoes Mayón and Bulasán are the most important of this ridge.

Among the ridges of lesser importance, situated in the island of Luzon, the following merit notice: The Sierra de Zambales, ending in the north at the cape of Bolinao and in the south at Mount Maribeles; and the Sierras Sungay and Maquilín, the most important peaks of which are Batulao, Mapait, Ulila, and San Cristóbal.

On the island of Mindanao there is a ridge running from north to south, beginning between Surigao and Butuan and reaching its highest altitude in Mount Catalán; there is

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another beginning at the Hingog Mountains, running parallel to the former during the first two-thirds of its course and terminating at the cape of Saranganí, reaching its highest altitude in Mount Pantadón; a third ridge beginning at the volcano Apo, running in a northwesterly direction and ending on the isthmus of Misamís or Panguil; and the fourth and last, the most important of all, a ridge beginning at Point Cauit, runs toward the west, joins the last-mentioned ridge at the isthmus of Misamís, forms the peaks of Randaya, and then branches off in different directions. To this ridge belong the mountains Cabigán, Tulangatura, Tinuba, Tarlín, and Malandí.

As to the less important islands very little can be said about them. Paragua is traversed by a mountain ridge running from north to south. Samar possesses a ridge running also from north to south, and having a large number of ramifications, as well as the following peaks: Curao, Capotaán, Palapa, and Matuguinao. The island of Panay has a large ridge beginning in the northwest, terminating in the vicinity of the city of Dumarao, its culminating point being Mount Opao. On the island of Mindoro there are three ridges, one running from the northwest to the southeast, while the two others are parallel to the eastern and western coasts. The most important mountains are Calavite, Abra de Ilog, and Bacóo. The island of Leyte has a very broken terrain, with a large ridge running from the northwest to the southeast, with the following peaks: Calasí, Mandivin, Aslum, and Sibugay. Negros Island has a high ridge traversing it from north to south, with various branches; one of its highest peaks is the volcano Canlaón. The island of Cebú is likewise traversed by a low ridge running from north to south. The island of Masbate has numerous tortuous ridges and the mountains of Cavanán and Bagalayag. That of Bohol has the following mountains: Bunucán, Mohangín, Carohabol, Campusá, and others of less importance. The island of Catanduanes has three ridges starting from one central nucleus. Marinduque has a principal ridge running from Mount Malindig to San Antonio, and has various ramifications. The island of Tablas has the Palaopao Mountains; Burias, the peak named Engañosa; and a line of mountains crosses the island of Ticao.

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GEOLOGY.

The general belief is that the Philippines once formed a part of an enormous continent from which it was separated by some cataclysm. This continent probably extended from Celebes to the farthest Polinesian islands on the east, to New Zealand on the south, and the Mariana and Sandwich islands on the north.

These islands, according to Ramón Jordana, are divided into two volcanic regions, the eastern and the western. The principal point is the volcano Taal, located in the northeastern portion of the province of Batangas. It is situated on a small island in the center of the Bombón laguna, and has an altitude of 550 feet above sea level. Its form is conical, and the rock is composed of basalt feldspar with a small quantity of augite. The crater is supposed to be 232 feet deep. Its sides are almost vertical, and there are two steaming lagunas at its bottom. Mount Maquilín is situated to the northeast of Taal. It is an extinct volcano, whose crater is fully 824 feet deep. It is also of conical form and covered with vegetation. Round stones of augite with crystals of hornblende are found on the brow of the mountain. To the east of Maquilín rises the volcano Banajao, also extinct. The soil toward the north is formed of lava. Close to the city of Porac, near the province of Pampanga, the soil abounds in feldspar sand, alternating with layers of clay. Tophus and loam are frequently seen, especially in the province of Zambales. Around Santa Cruz, in the direction of Pangasinán, are to be found rocks composed of white feldspar with crystals of augite. In the region embracing the provinces of Manila, Bulacán, Pampanga, Tarlac, and Pangasinán the soil is mostly composed of clay containing remnants of sea shells, a circumstance which gives rise to the belief that the coast of Manila has risen from the sea in not so remote an epoch. Smooth, dark-gray tophus predominates; it forms the bed of the Rio Pasig, and rising forms hillocks in the vicinity of the city of Binangonán. Farther on, trachyte and banks of conchiferous sand predominate.

The vast plain of Pampanga extends to the north of Manila Bay, to the south of which is situated Mount Arayat, of doleritic nature.

Feldspar sand abounds around this mountain. The Caraballo Ridge is composed in various sections of andesite rock, succeeded by another, resembling greatly the diabase. At

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the junction of Rio Magat and Rio Pinquiang there is a hill, at the foot of which is an abundance of gypsum loam, intermingled with feldspar rocks of volcanic origin. There are also hills composed of trachyte and soil abounding in gabbro. Tophus and loam containing fossil plants are abundant in the vicinity of Galiano; coral lime enters principally into the composition of the mountains surrounding the valley in which the city of Trinidad is situated. Along the Rio Agno no rocks but diorite are to be met with.

According to Doctor Drasche, there are five different kinds of rocks in the northern part of Luzon:

1. Coral reefs and banks of coral lime with rocks of recent volcanic origin.
2. Tophus and tophic gravel containing deposits formed by banks of coral lime and loam with remnants of plants.
3. Rocks of modern volcanic origin.
4. Rocks formed of coarse gravel proceeding from adjoining layers of arsenite of copper and diabasic rocks.
5. Diorite, protogenetic gneiss, and chloric slate.

According to the judgment of Señor Jordana, the coral lime rock is of recent formation, as it contains in abundance remnants of coral and organic remains belonging to species that live at present in the Indian Ocean. The tophus and tophic gravel are of more ancient origin than the coral reef. The fundamental rocks are the diabase, gabbro, sienite, diorite, arsenite of copper, and protogenetic gneiss.

It is supposed that the western part of Luzon was primarily composed of a ridge of crystalline slate, which was subsequently displaced by violent eruptions of sienite and diabase, the fragments of which constitute the basis of a formation of strata of gravel and rock. A long period of time will probably pass before the volcanoes renew their activity. However late or early this may occur, great masses of tophus will have to form on the western coast, as it will require a long period of submersion before such enormous sediments can be deposited. During this period of rest the corals may develop their activity in small spaces and will form, with the remains of the floating vegetation of the continent, loam containing vegetable fossils. Before the end of the period of submersion, the volcanic activity must cease and the corals form on the submarine tophus reefs parallel to the coast. It is probable that the western volcanic region is prolonged toward the south in

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order to join the eastern. The information to be had on the geological composition of these islands is very incomplete.

EASTERN VOLCANIC REGION.—The principal point is the volcano Mayón, still in activity, of a conic form, and having, according to Jagor, an altitude of 8,980 feet. In the northeast rises Mount Mazaraga, composed of dolerite. Along the bed of the Rio Vicol there extend toward the north highly developed volcanic formations, while toward the south the soil is composed of limy loam, containing a large amount of fossils. The volcanic zone is prolonged by Mount Malinao, the Iriga, and the Isarog. The first is composed of dolerite rock, the second of dolerite and olivenite, and the third of andesite and hornblende. The eastern volcanic region is prolonged in the province of Camarines Norte by the Sierra Colasí and Mount Labóo. Conchiferous lime, andesite, and trachyte are most abundant in this region. A mountain ridge extends from the western frontier of the provinces of Camarines Norte and Camarines Sur to the Banajao Mountain, which is an extinct volcano. Tophus, yellow lime, banks of hornblende, andesite, and coral lime, as well as coral reefs, abound in this part of the country. From Isarog toward the north-northwest the volcanic zone gradually disappears and dips into the waters of the Pacific Ocean. In the extreme east of the northern coast of Luzon is situated the volcano Cagua, to the north of which rises the Camiguín volcano, situated on an island bearing the same name. To the southeast of Mayón runs the Sierra Pocdol, also of volcanic origin. In the same direction is situated Mount Bulusán, which from time to time ejects sulphurous and watery vapor. In the south the volcanic region dips under the waters of the sea to reappear in the Dagamí ridge. In the west are situated the islands of Cebú and Bohol, surrounded by reefs of living madrepores. In the interior of the island of Cebú is found an azure-colored lime, in which are embedded layers of clayish slate and gravel alternating with layers of coal.

In the island of Samar are found beds of ferruginous clay. On that of Majaba appears volcanic tophus, and in the vicinity of Loquilocum there are deposits of coal. The eastern volcanic region traverses the island of Camiguín, situated to the north of Mindanao. There is a volcano in this island, which appeared in 1871. The formation of which the island of Mindanao is composed is not well known, but there are many

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indications of a volcanic origin. Within the eastern volcanic region are two volcanoes—the Apo, having an altitude of 10,832 feet, and still in activity, and the Sarauganí, which is extinct.

HYDROGRAPHY.

The disposition of the mountain ranges in parallel chains affords space for the development of streams both in Luzon and Mindanao. The larger islands contain inland seas, into which pour countless small streams from the inland hills. Many of them open out into broad estuaries, and in numerous instances coasting vessels of light draft can sail to the very foot of the mountains. Rivers and inland lakes swarm with varieties of fish and shellfish. By reason of Spanish restrictions, but little can be said as to the character of the stream banks and beds. Four of the rivers are navigable, and, by the statements of those who have spent some little time on the islands, most are fordable. Drinking water is obtained by many of the towns from the rivers at points just above tide limits, and the water is said to be good. Bridges are few and crude, but are generally built to withstand heavy strain.

The island of Luzon abounds in rivers and streams. The following are the principal water courses:

Rio Grande de Cagayán, the source of which is in the northern slope of the Caraballo Norte. It has numerous affluents, among others the Magat and Bangag, and, after a course of about 200 miles, falls into the China Sea in the vicinity of Aparrí.

Agno Grande starts in the north, in the neighborhood of the ranch of Loó, receives the affluents Tarlag and Camiling, as well as many others, has a course of about 112 miles, and falls into the Gulf of Lingayen.

Abra has its origin on the opposite slope to that where Agno Grande takes its rise; runs for about 87 miles, and, after receiving the affluent Suyoc, divides into three arms and falls into the China Sea over the sand bars of Butao, Nioig, and Dile.

Rio Grande de la Pampanga is called Rio Chico up to the lake of Canasén, near Arayat, where it changes its name after its junction with Rio Gapán. Its course is a little over 38 miles; it receives the Rio de San José and divides into a multitude of arms as it falls into the sea to the north of Manila Bay.

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Rio Pasig has its source in the Bay Lagoon, and falls after a course of 19 miles into Manila Bay.

Rio Vicol starts in the province of Camarines Sur and divides into two arms, one of which falls into the lake of Bató and the other into the spacious bay of San Miguel.

The island of Mindanao has:

Rio Agusán or Bulúan, almost as important a river as Rio Grande de Cagayán with regard to its volume and length—236 miles. It starts near the gulf of Davao and falls into that of Bulúan.

Polanguí, beginning at the foot of the volcano of Apo, runs toward the peak of Randaya and falls into the bay of Illana, after a course of 87 miles.

Lubungán, falling into the gulf of Dapitan.

Iligan, falling into the bay of the same name.

The island of Paragua has many streams, but all of them have but a short course.

The island of Samar has the following:

Oras, having a course of 24 miles and falling into the gulf of Uguís on the Pacific.

Suribao, falling into the Pacific near Borongán.

Buruhán, having a course of 19 miles.

Bató-Laguán, *Basey*, *Calayog*, *Timonini*, *Antiyao*, and many others.

The island of Panay has the following:

Rio Panay, starting in the eastern branches of the Tapas Mountains, runs for 38 miles and terminates its course near Cápiz.

Rio Aclán starts at the foot of Mount Opao and terminates at the city of Calivo, a course of 45 miles.

Rio Taland, with the affluents Lambunao and Passi, rises on the southern slope of the Tapas Mountains and terminates in the vicinity of Dumangas.

Rio Salog, which rises in the mountains of Maasim, receives the affluents Tigum and Ayumán and disappears in the vicinity of Iloilo.

Rio Dalanás, rising in the ridge dividing the district of Antique from that of Iloilo, has a rapid course of 24 miles and falls into the sea between Bárbara and Tibiao.

Sabalón has an impetuous course of 68 miles.

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The island of Mindoro possesses a multitude of streams, but they are of small importance. Among them are the following:

Navuluán, traversing the island from north to south.

Pulá, in the district of Pola.

Manjao, between Ticling and Bulalacao.

In the island of Leyte are the following:

Maya, beginning in the lake of Bito and falling into the Pacific Ocean, after a course of 31 miles.

Barauén, rising to the south of the Dagamí Mountains, runs as far as the city of the same name.

Bito, starting from the lake of the same name, terminates near Abayog.

Leyte, starting from a lake in the west of Jaro, falls into the sea in the vicinity of the city of the same name.

Maasí, having a course of more than 28 miles, has its origin in the mountain of the extreme south of the island and terminates at Gigantigán.

Rio Cantiling, *Tananán*, *Amilao*, and others.

On the Negros island:

Rio Danao, of great depth and breadth.

Marianás, with a wide arm named Tanao, which falls into the sea on the northern coast.

Hinigarán, *Himamailán*, and *Ilog*, falling on the western coast.

San Enrique, *Cádiz Nuevo*, and several others.

In the island of Cebú are the following:

Balumbán, *Gim*, *Mananga*, *Naga*, and *Sampanán*.

On the island of Masbate are:

Rio Asit and *Lauán*, having their origin in the Bagasimbahán Mountains.

The island of Bohol has a multitude of streams, the greater part of which are very short. Among others are the following:

Manaba, *Masin*, *Calidian*, and *Napo*.

The island of Catanduanes has very small rivers. The most important of them are:

Bató, *Himoto*, and *Tinago*.

On the island of Polillo are:

Monleo, *Upata*, and others.

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HARBORS.

The immense coast line of the islands contains a great number of good harbors, but as a consequence of the exclusive policy of the Spanish Government in closing them to foreign commerce, very little is known except to coastwise navigators. Trade is confined chiefly to Manila, Iloilo, Cebú, and Sual. Zamboanga, on the island of Mindanao, is also an open port.

The Bay of Manila, one of the finest in the world, is about 120 miles in circumference, with very few dangers to navigation. (See plan of Manila on separate map.)

There are two long piers running out from the mouth of the Pasig River, one terminating in a light-house and the other in a small fort. In stormy weather safe anchorage is found off Cavite some 8 miles to the southwest by water. At that point is found the naval establishment, including a marine railway, capable of taking from the water vessels of 2,000 tons displacement, and a dock for small vessels.

Iloilo, the second port in importance, is on the island of Panay, near its southeastern extremity and about 250 miles in a direct line from Manila. Well-protected and naturally good anchorage for large vessels is found outside the mouth of the Iloilo River, but small vessels enter it and discharge cargoes at the town wharves.

ROADS.

Of the interior roads little can be said, and of those running along the coast positive information is not available.

Roadbeds are generally fair and easy during the dry season and average about 25 feet in width. Some are ditched and graded, but very little metal has been placed upon them, and in the wet season road transportation is almost impossible. During the latter season transportation by roads is carried on by means of rude sledges drawn by buffalo—a sort of sleighing on mud.

CLIMATE.

The extreme length of the Philippine group being from north to south, their northern extremity reaching to the northern limit of the tropical zone, causes a considerable variety of climate. However, the general characteristics are tropical.

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In the region of Manila the hottest season is from March to June, the greatest heat being felt in May before the rains set in, when the maximum temperature ranges from 80° to 100° in the shade. The coolest weather occurs in December and January, when the temperature falls at night to 60° or 65° and seldom rises in the day above 75°. From November to February the sky is bright, the atmosphere cool and dry, and the weather in every way delightful. Observations made at the Observatorio Meteorológico de Manila have been compiled by the U. S. Weather Bureau, covering a record of from seventeen to thirty-two years, from which the following is an extract:

Temperature, degrees F.:	
Mean annual	80°
Warmest month	82°
Coolest month	79°
Highest	100°
Lowest	60°
Humidity:	
Relative per cent	78
Absolute grains per cubic foot	8.75
Wind movements in miles:	
Daily mean	134
Greatest daily	204
Least daily	95
Prevailing wind direction—NE., November to April; SW., May to October.	
Cloudiness, annual per cent	53
Days with rain	135
Rainfall in inches:	
Mean annual	75.43
Greatest monthly	120.98
Least monthly	55.65

The following is the mean temperature for the three seasons, at points specified:

	Cold.	Hot.	Wet.
Manila	72°	87°	84°
Cebú	75°	86°	75°
Davao	86°	88°	87°
Sulu	81°	82°	83°

Seasons vary with the prevailing winds (monsoons or trade winds) and are classed as "wet" and "dry." There is no abrupt change from one to the other, and between periods there are intervals of variable weather.

The Spanish description of seasons is as follows:

Seis meses de lodo—six months of mud.

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Seis meses de polvo—six months of dust.

Seis meses de todo—six months of everything.

The northern islands lie in the track of the typhoons which, developing in the Pacific, sweep over the China Sea from NE. to SW. during the southwest monsoon. They may be looked for at any time between May and November, but it is during the months of July, August, and September that they are most frequent. Early in the season the northern region feels the greatest force, but as the season advances the typhoon gradually works southward and the dangerous time at Manila is about the end of October and the beginning of November. Typhoons rarely, if ever, pass south of 9° N. latitude. Sometimes the typhoon is of large diameter and travels slowly, so far as progressive motion is concerned; at others it is of smaller dimensions, and both the circular and progressive motions are more rapid. However, they are always storms of terrific energy and frequently cause terrible destruction of crops and property on shore and of shipping at sea. Thunderstorms, often of great violence, are frequent in May and June, before the commencement of the rainy season. During July, August, September, and October the rains are very heavy. The rivers and lakes are swollen and frequently overflow, flooding large tracts of low country.

At Manila the average rainfall is stated to be from 75 to 120 inches per annum, and there the difference between the longest and shortest day is only 1 hour 47 minutes and 12 seconds. This rainfall, immense though it be, is small as compared with that of other parts of the archipelago; *e. g.*, in Liano, NE. of Mindanao, the average yearly downpour is 142 inches.

GALES.

The gales of the Philippines may be divided into three classes, known by the local names of Colla, Nortada, and Baguio. The Colla is a gale in which the wind blows constantly from one quarter, but with varying force and with alternations of violent squalls, calms, and heavy rains, usually lasting at least three days; these gales occur during the southwest monsoon and their direction is from the southwest quarter. The Nortada is distinguished from the Colla, in that the direction is constant and the force steady, without the alternations of passing squalls and calms. The Nortada is generally indicative that a typhoon is passing not very far

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off. These gales occur chiefly in the northern islands, and their direction, as the name implies, is from the northward. Baguio is the local name for the revolving storm known as the typhoon, which, being the more familiar term, will be used in these notes.

TYPHOONS.

These storms have their origin to the east or to the southeast of the Philippines, whence their course is westward, with a slight divergence to the north or south, the average direction appearing to be west by north. They occur in all months of the year, but the greater number take place about the time of the equinoxes. The most violent ones occur at the autumnal equinox, and on an average, two or three occur every year, and sometimes one follows another at a very short interval. It is believed that when one of these typhoons passes in a high latitude in September there will be another in October of that year, and one may be looked for in November in a lower latitude. These tempests are not encountered in latitudes below 9° N. The rate of progress of these storms is about 13 miles an hour; in none of those observed has it exceeded 14 miles nor fallen below 11 miles. The diameter of the exterior revolving circle of the storm varies from 40 to 130 miles, and the diameter of the inner circle, or calm region, may be estimated at from 8 to 15 miles. The duration of the true typhoon at any one place is never longer than ten hours and generally much less. These storms are always accompanied by abundant rain, with low, dense clouds, which at times limit the horizon to a few yards distance, and are generally accompanied by electrical discharges. The barometer falls slowly for some days before the typhoon, then falls rapidly on its near approach, and reaches its lowest when the vortex is but a little way off. It then rises rapidly as the vortex passes away, and then slowly when it has gained some distance. Near the vortex there are usually marked oscillations. The typhoon generally begins with a northerly wind, light drizzling rain, weather squally and threatening, a falling barometer and the wind veering to the eastward, when the observer is to the northward of the path of the storm, and backing to the westward when he is to the southward of it; the wind and rain increase as the wind shifts, and the storm generally ends with a southerly wind after abating gradually.

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The following warnings of the approach of a typhoon, and directions for avoiding the most dangerous part of it, are taken from the China Sea Directory: The earliest signs of a typhoon are clouds of a cirrus type, looking like fine hair, feathers, or small white tufts of wool, traveling from east or north, a slight rise in the barometer, clear and dry weather, and light winds. These signs are followed by the usual ugly and threatening appearance of the weather which forebodes most storms, and the increasing number and severity of the gusts with the rising of the wind. In some cases one of the earliest signs is a long heavy swell and confused sea, which comes from the direction in which the storm is approaching, and travels more rapidly than the storm's center. The best and surest of all warnings, however, will be found in the barometer. In every case there is great barometric disturbance. Accordingly, if the barometer falls rapidly, or even if the regularity of its diurnal variation be interrupted, danger may be apprehended. No positive rule can be given as to the amount of depression to be expected, but at the center of some of the storms the barometer is said to stand fully 2 inches lower than outside the storm field. The average barometric gradient, near the vortex of the most violent of these storms, is said to be rather more than 1 inch in 50 nautical miles. As the center of the storm is approached the more rapid become the changes of wind, until at length, instead of its direction altering gradually, as is the case on first entering the storm field, the wind flies around at once to the opposite point, the sea meanwhile breaking into mountainous and confused heaps. There are many instances on record of the wind suddenly falling in the vortex and the clouds dispersing for a short interval, though the wind soon blows again with renewed fury.

In the northern hemisphere when the falling barometer and other signs create suspicion that a typhoon is approaching, facing the wind and taking 10 or 12 points to the right of it, will give the approximate bearing of its center. Thus, with the wind NE., the center will probably be from S. to SSE. of the observer's position. However, it is difficult to estimate the center of the vortex from any given point. This partly arises from the uncertainty as to the relation between the bearing of the center and the direction of the wind, and greatly from there being no means of knowing whether the storm be of large or small dimensions. If the barometer falls slowly, and

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the weather grows worse only gradually, it is reasonable to suppose that the storm center is distant; and conversely, with a rapidly falling barometer and increasing bad weather the center may be supposed to be approaching dangerously near.

PRACTICAL RULES.—When in the region and in the season of revolving storms, be on the watch for premonitory signs. *Constantly observe and carefully record the barometer.*

When on sea and there are indications of a typhoon being near, heave to and carefully observe and record the changes of the barometer and wind, so as to find the bearing of the center, and ascertain by the shift of the wind in which semicircle the vessel is situated. Much will often depend upon heaving to in time. When, after careful observation, there is reason to believe that the center of the typhoon is approaching, the following rules should be followed in determining whether to remain hove to or not, and the tack on which to remain hove to:

In the northern hemisphere, if in the right-hand semicircle, heave to on the starboard tack. If in the left-hand semicircle, run, keeping the wind if possible, on the starboard quarter, and when the barometer rises, if necessary to keep the ship from going too far from the proper course, heave to on the port tack. When the vessel lies in the direct line of advance of the storm—which position is, as previously observed, the most dangerous of all—run with the wind on the starboard quarter. In all cases increase as soon as possible the distance from the center, bearing in mind that the whole storm field is advancing.

In receding from the center of a typhoon the barometer will rise and the wind and sea subside. It should be remarked that in some cases a vessel may, if the storm be traveling slowly, sail from the dangerous semicircle across the front of the storm, and thus out of its influence. But as the rate at which the storm is traveling is quite uncertain, this is a hazardous proceeding, and before attempting to cross the seaman should hesitate and carefully consider all the circumstances of the case, observing particularly the rate at which the barometer is falling.

CURRENTS.

The waters of the Pacific Ocean between the parallels of 26° S. and 24° N. have a regular motion from east to west, which is known as the equatorial current. This, at a little

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to the northward of the Equator, appears to be divided into the north and south equatorial currents by the equatorial countercurrent, a stream flowing from west to east throughout the Pacific Ocean. The currents in the western part of the Pacific, to the northward of the Equator, are affected by the monsoons, and to the southward of the Equator they are deflected by the coast of Australia.

The trade drift, which flows to the westward between the parallels of 9° and 20° N., on reaching the eastern shores of the Philippine Islands again turns to the northward, forming near the northern limit of that group the commencement of the Japan stream. The main body of the current then flows along the east coast of Formosa, and from that island pursues a northeasterly course through the chain of islands lying between Formosa and Japan; and sweeping along the southeastern coast of Japan in the same general direction, it is known to reach the parallel of 50° N. The limits and velocity of the Japan stream are considerably influenced by the monsoons in the China Sea, and by the prevailing winds in the corresponding seasons in the Yellow and Japan seas; also by the various drift currents which these periodic winds produce.

Current East of Mindanao.—Alternate currents, dependent upon the prevailing monsoon, exist between the Equator and the southern limit of the northern equatorial current, and from the meridian of 142° E. to the Philippine Islands. These are sometimes called the currents of the Caroline monsoons, because the maximum speed of this current toward the NE. and ENE. is observed a little to the westward of the Caroline Islands during the southwest monsoon (from June to October); but during the NE. monsoon (October to May) the current sets to SW. and WSW., and forms a prolongation of the northern equatorial current.

Equatorial Countercurrent.—This countercurrent is an irregular stream, setting toward the east. It is about 300 miles wide and lies between the northern and southern equatorial currents. Though the limits of the countercurrent are imperfectly defined, it appears to be comprised between the Equator and the parallel 9° N.; the greatest width of its bed is never more than 5° of latitude. In the eastern part of the Pacific it generally keeps between 5° and 8° N., while in the Central Pacific it is generally nearer the Equator. It sets toward the east with a speed of sometimes 2½ miles an hour,

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but its rate is ordinarily much less, the mean speed being about half a mile.

China Sea Currents.—The currents of the China Sea appear to be caused by the wind; during the NE. monsoon they trend generally to the SW., and during the SW. monsoon to the NE. During the NE. monsoon a counter current often flows to the NE., and north on the northwest coast of Borneo. The countercurrent can often be utilized while beating up the China Sea against the monsoon.

Sulu Sea.—During the northeast monsoon in the Sulu Sea the current runs regularly in the direction of the wind, and varies in force according to the strength of the wind. In the early months of this monsoon, when the wind blows strongest, the current runs with the velocity of a mile an hour, decreasing to about half a mile an hour in May. In June the current reverses with the wind.

TIDES.

Among the Philippine Islands, when the sun has north declination, the higher tides about spring occur during the day, and when it has south declination, during the night.

The mean tide level on the different coasts varies during the year; on the coast of Luzon it is lowest in February and highest in August.

On the coast of Luzon, on the island of Paláwan, and on the northern part of Borneo, it is high water, full and change, between 9 hours and 30 minutes and 11 hours; rises 3 to 6 feet. In the northern part of the Sulu Sea, Iloilo, and Cebú, and on the NE. coast of Borneo, it is between 11 hours and 30 minutes and 12 hours.

In the straits of San Bernardino and Surigao, on the south coast of Mindanao, and in the Sulu Archipelago, the tidal wave arrives from 6 hours to 8 hours; in the Celebes Sea, from 5 hours to 6 hours; rise 6 to 7 feet.

At Manila, Iloilo, Surigao Straits, and Balábac, two or three days after the moon has crossed the Equator, two high and two low tides are observed in the twenty-four hours, of nearly equal amplitude; during the following days one tide increases in amplitude and the other decreases, until but one occurs in twenty-four hours.

Two or three days after the moon has attained its greatest declination, either north or south, the single tide that exists attains its maximum. It then decreases in amplitude with

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the declination of the moon; soon a second tide appears, the amplitude of which increases as the other lessens, and the two tides are equal two or three days after the moon has recrossed the Equator; then the first continues to lessen while the second increases until again there is but one tide in the twenty-four hours. There can hardly be said to be a regular "establishment," as it váries daily for each of the two diurnal tides according to the positions of sun and moon.

The tides on the south coast of Mindanao present the following peculiarities: The diurnal wave is propagated more slowly than the semidiurnal, and increases in amplitude on advancing from Davao to Basilan Strait, whilst the semidiurnal wave decreases in amplitude. The diurnal inequality makes itself very apparent in the heights of the flood tides, and in the hours of low tides, and is but little apparent in the height of the low tides and the hours of the flood tide.

As a result of these laws and of the values of the diurnal inequalities, there are at Davao and Palak always two tides daily, except at the time of certain equinoctial quarters when the moon has a maximum declination. At Zamboanga there will generally be two tides a day, but one only at every equinoctial quarter. At Isabela the difference is more marked; there are some years in which the number of days having but one tide in twenty-four hours exceeds the number of days having two tides. In all cases, however, there are always two equal tides in twenty-four hours, one or two days after the moon has passed the Equator.

In the course of one day the higher tide, when there are two, and the single high tide, when there is only one in the day, is that which immediately follows the hour of the moon's superior, or inferior, transit, according as her declination is south or north.

POPULATION AND INHABITANTS.

Spanish statistics are notoriously unreliable, and no accurate census has ever been taken, but the population has been estimated at about 8,000,000, of which the bulk is of Malay origin. On first arrival the Spaniards found a part of the natives somewhat civilized; but while they had a written language, of which some specimens have been preserved, it was of no value in throwing light upon their early history, and their traditions are very few. As in Mexico and Central America, the Spanish priests have been only too successful in

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their efforts to extirpate all mythological and other lore. The treatment of the inhabitants has been more merciful, however, than in the western possessions.

The Philippine Malays are a superior race to many other Asiatic peoples; orderly, amiable, courteous, honest, and exceedingly superstitious, they are easily influenced upon profession of Christianity. Like most tropical people, their efforts are intermittent rather than steady; their wants are readily provided for, and they take life easy. The inhabitants of the island are composed of the most diverse mixtures of races, including Malays, Aëtas, Negritos, pure blacks, Chinese, Japanese, Indios, Moors, Europeans, and mixtures of each with the others. There are nearly as many different tribes as there are islands, and it is said that 500 languages and dialects are spoken in the islands at the present day. The inhabitants are generally tractable and amenable to government, and generally not hostile to foreigners. In the inaccessible parts of the island there are still tribes of unsubdued savages, whose number is estimated at about 602,000. Fond of music, dancing, and amusements of all kinds, they are born gamblers, and cock fighting is their greatest passion. Every town has its cockpit, and in the largest the spectators may be numbered by thousands. This amusement is heavily taxed by the Spaniards, and advantage is taken of the taste for gambling by running a lottery for the benefit of the government.

Probably not more than fifteen or twenty thousand Spaniards, or people of pure Spanish blood, are permanent residents, and the number of other foreigners is not large. The majority of these are at Manila, where the English have established a club in the suburbs, which has become the center of foreign social intercourse.

Without doubt, the most primitive of the Philippine peoples are the Aëtas, or Negritos, a race of blacks of almost dwarfish stature. They are believed to be, and with good reason, the true aborigines of the islands, who, even at the time of the early Spanish conquest, had begun to go to the wall under the fierce struggle for existence with the encroaching Malay tribes. At present they are well nigh extinct, and promise to become entirely so. These people are confined to the higher mountain ranges in Luzon and Negros, although a few are found in Mindanao.

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AGRICULTURE, MANUFACTURE, AND TRADE.

The soil is most fertile, but agriculture almost wholly undeveloped. The people are skillful weavers of cotton and silk; they tan leather, excel in shipbuilding, and make good wagons and carts.

VEGETABLE KINGDOM.

The Philippines are very rich in woods; ebony, cedar, ironwood, sapan wood, logwood, and gum trees abound. Guttapercha is found in certain localities. Cocos nucifera is of great value, trunk, branches, leaves, fruit, shell, and husk being used. Bamboo and areca palm are abundant and of great utility. Two woods, the "banava" and the "malave," resist the destructive action of water for centuries. Many plants have medicinal value, others (the "camansi" and the "tabuyog") are poisonous. Mangoes, plantains, jack fruits, and the Malayan fruits are met with. Rice is the staple food, but often not enough is raised to supply the demand. Potatoes, peas, and even wheat are raised in the higher localities.

ANIMAL KINGDOM.

Deer abound in the thickets of all the islands; flesh very nutritious. There are also many buffalo ("caravaos") and wild horses. The buffalo, called "karbo" by the Malays, is the great beast of burden. It is very strong, and docile if domesticated, but dangerous in the wild state. The Philippine horse is small and of poor appearance, but it is a strong and sturdy animal. Fine specimens sell for $100 to $150; $15 or $20 will buy a pair for draft purposes. The bull (of Spanish origin) has propagated his species very numerously, and is found wild. There are various kinds of monkeys, mountain cats, and the "nasigan," a small quadruped that is death to rats.

Among reptiles are found the "boa" or "culebra casera," the python, and the terrible "dehenpalay." The bite of the latter is almost instantly fatal; it is a short and slender snake, similar in appearance to a rice leaf.

Of birds there are infinite species. Fish abound in the seas, lakes, and rivers; sharks and alligators are found in the seas. Swampy and damp localities swarm with insects, the mosquito being conspicuous. The "anay," a sort of ant, destroys all wood except the "molane" with astonishing rapidity.

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MINERALS.

From what is known of the mineralogy of the islands, there is no doubt that a scientific geological survey would prove that they are rich in ore deposits of many kinds. Gold is found, especially in the mountainous districts of Luzon and on the islands of Mindanao and Mindoro. In spite of promising fields, the Spaniards have neither taken measures to prosecute a search for it, nor attempted the application of modern scientific means to obtain profitable results from the present workings.

It is not believed that true coal is to be found in large deposits. The beds that have been worked on the islands of Cebú and Masbate consist of lignite of very good quality. The Masbate beds are near the beach; are tilted so as to form about 70° with the horizon, and, roughly estimated, will yield about 20,000 tons to the acre. Iron ore of excellent quality is abundant, but from lack of means of transportation and machinery, it has, so far, been found cheaper to depend upon importation. Rich deposits of copper exist, and galena and zinc blendes have been found. Sulphur is found in the vicinity of many of the ancient volcanoes, and in quantities that would prove profitable, could transportation facilities be obtained.

TRADE.

Early commerce with the world was greatly restricted by the efforts of Spain to secure a monopoly of her subjects. It was not until 1809 that the first English firm obtained permission to establish a business house in Manila. In 1814 this permission was more general. It is, however, only since 1834 that greater freedom of intercourse and larger introduction of foreign capital and methods have materially affected the development of natural resources.

Internal commerce, as well as foreign trade, suffers from lack of facilities for transportation. This is marked during the rainy season, when coasting is dangerous and land carriage impeded by bad roads and the swollen condition of the streams. But one railroad has been built, running from Manila to Pangasinán (123 miles). A single track road, it is of substantial construction, and connects the capital with the rice-growing districts.

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EXPORTS.

The principal staples of export are tobacco (manufactured and raw), manila hemp, sugar cane, coffee, and cocoa. The principal manufactures consist of a variety of textile fabrics, hats, mats, baskets, ropes, furniture, coarse pottery, carriages, and musical instruments.

EXTRACTS FROM THE CONSULAR REPORTS (JUNE, 1898).—During the quarter ending December 31, 1897, there were exported from these islands to the United States and Great Britain 216,898 bales of hemp (280 pounds per bale), of which 138,792 bales went to the United States and 78,106 bales to Great Britain. During the year 1897 there was an increase in the export of hemp from the Philippines to continental Europe of 19,741 bales; to Australia, 2,192 bales; to China, 28 bales; to Japan, 2,628 bales, and to the United States 133,896 bales—a total increase of 158,485 bales, while to Great Britain, there was a decrease of 22,348 bales. Thus, of increased shipments from the Philippines, those to the United States were 544 per cent greater than to all other countries combined. Of the total exports of hemp from the Philippines for the ten years ended 1897, amounting to 6,528,965 bales (914,055 tons), 41 per cent went to the United States.

During the same years the Philippine Islands exported to the United States and to Europe 1,582,904 tons of sugar, of which 875,150 tons went to the United States, 666,391 tons to Great Britain, and 41,362 tons to continental Europe; showing that of the total exports more than 55 per cent went to the United States.

At the current values, in New York, of hemp (4 cents per pound) and of raw sugar ($3\frac{3}{8}$ cents per pound), the exports of these two products alone from these islands to the United States during the ten years under review amounted to $89,263,722.80, or an average of nearly $8,926,372 per year.

Data as to cigars, tobacco, copra, woods, hides, shells, indigo, coffee, etc., are not now obtainable, but a conservative estimate would so raise the above figures as to show United States imports from these islands to average about $1,000,000 per month. To-day there are authenticated invoices for export to the United States amounting to $138,066.12.

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IMPORTS.

The following statement of the general trade of the Philippine Islands is taken from the "Review of the World's Commerce," 1896–'97, soon to be published by the Bureau of Foreign Commerce. According to a British Foreign Office report (No. 1932, annual series, 1897), the total imports into the islands in 1896 were valued at $10,631,250, and the exports at $20,175,000. The trade with several of the most important countries, compiled from the respective official statistics, was:

Country.	Imports.	Exports.
Great Britain	$2,467,090	$7,467,500
Germany	744,928	223,700
France	1,794,900	1,987,900
Belgium	272,240	45,660
United States	162,446	4,982,857
China	103,680	13,770
Japan*	98,782	1,387,909

*In 1897.

The chief imports are rice, flour, dress goods, wines, coal, and petroleum.

REVENUE.

The public revenue is about $12,000,000 per annum, of which the larger part is raised from direct taxation, customs, monopolies, and lotteries. For the imposition and collection of taxes Spanish ingenuity has been exercised to the utmost, but the basis of the financial system in the Philippines is the poll tax, which every adult under sixty years of age, male or female, has to pay. There is no export duty on tobacco, but almost every article of import is heavily taxed. On muslin and petroleum the duty is about 100 per cent of cost.

COMMUNICATIONS.

Manila is connected with Hongkong by cable and by line of steamers. There is a line running from Manila to Liverpool, known as the Compañía Transatlántica, which has three large steamers averaging 4,500 tons and about 4,000 horsepower each. The average speed is about 12 knots. This line maintains a monthly service to Europe, calling at Singapore, Colombo, Aden, Suez, Port Said, and Barcelona.

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It is reported that another line has been formed in Spain to compete with the above line. Also four lines of steamers between Manila and Hongkong (names not given.)

Many local lines of steamers ply between Manila and the provinces, the largest being the Compañía Marítima, which has 28 steamers with a total of 25,000 tons. (In northeast monsoon leave about 10 a. m.; southwest monsoon, 4 p. m.) Ynchansta & Co. have two small steamers of 1,000 tons; S. P. Yanger, one small steamer of 500 tons; De la Rama & Bros., three small steamers (coasters) of 500 tons; and Armstrong & Sloan, three small coasters of 400 tons. The usual points touched by these steamers include all the ports in the Philippine group; also the Caroline and Mariana Islands. Nearly all ships were built in England and are strong and well adapted to the trade. They are not fast, seldom exceeding 12 knots per hour, but are fitted with latest improvements.

PHILIPPINE LINE.—Compañía Transatlántica de Barcelona line of the Philippines extension, Iloilo, Cebú, and combinations to Gulf of Persia, east coast of Africa, India, China, Japan, and Australia, makes thirteen trips annually, leaving Barcelona every fourth Saturday, beginning January 1, 1898, and from Manila every fourth Thursday, beginning January 20, 1898.

The Spanish mail steamers in the Philippines prior to the naval battle of Manila were the following:

The Spanish steamer *Elcano*, or another boat belonging to the Compañía Marítima, leaves Manila for Singapore every twenty-eight days, in connection with French mail steamers returning homeward with mails after arrival of outward steamer.

The Spanish Royal Mail Line from Manila direct to Barcelona, calling at Singapore, Colombo, Aden, and Port Said, also leaves Manila every twenty-eight days. During the southwest monsoon the boats do not always call at Colombo.

The North Luzon Line is from Manila to Subic, Olangapo (the north arsenal, and where the large floating dock is to be erected), Bolinao, San Fernando, Croayan, and Currimas (all these on the west coast of Luzon and Aparri, entrance to Rio Grande in the extreme north of Luzon).

The South Luzon Line runs from Manila to Batangas, Calapan, Laguimanos, Passacao, Donsol, Sorsogon, Legaspi, and Tabaco.

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The Southeast Line runs from Manila to Romolon, Cebú, Cabolian, Surigao, Camiguin, Cagayán de Misamis, Iligan, Harihohoe, Bais, Dumaguete, and Iloilo.

The Southwest Line runs from Manila to Iloilo, Zamboanga, Isabela de Baslin, Iolo (Sula) Siassi, Tataan, Bongao, Parang Parang, Cottabato, Glan, Sarangani, Dayas, Matti, Lebak, and St. Maria.

These steamers return to Manila from eight to ten days after leaving; local steamers for the neighboring islands leave nearly every day. Manila is 7,050 nautical miles from San Francisco, and 9,465 nautical miles from Cadiz.

ADMINISTRATION.

In Madrid there is a council of state for the Philippines, which has in charge the interests of the colony and acts as an advisory board to the Minister of the Colonies. At Manila the administration of the government has for its head and chief a Governor General, who is at the same time Captain General, Director and Inspector General of all arms and institutes; this authority is also delegated Superintendent of Finances, President of the Administrative Council of the Ayuntamiento, Protector of the Spanish Bank and of the Economical Society of the Friends of the Country, Subdelegate of Postal Service, "Vice-Real Patrono," etc. Next to the captain generalship of Cuba, this is the most important and lucrative post at the disposal of the home Government. This jurisdiction also extends over the Mariana or Ladrone Islands, the Carolines, and the Pelew Islands.

There is also a Lieutenant-Governor, who takes the place of the Captain-General in case of his death, and a council in Manila, which has a voice in all questions concerning the internal affairs of the island. The archbishop also exerts considerable power, and the ecclesiastical authority is interwoven in all the machinery of government.

The islands are divided into four provinces and four military districts, and are governed by politico-military commanders.

The first exercise governmental jurisdiction, ordinary jurisdiction in first instance falling to the charge of the mayor alcaldes, who must be educated men; the second exercise by themselves governmental and legal jurisdiction in first instance, and all are captains in war. The province of Manila

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has a different organization. There have been created for Visayas and Mindanao two politico-military central governments of the brigadier class, by royal decree of July 30, 1860. Each province is subdivided into pueblos (towns) more or less numerous, and each one has a petty governor (gobernadorcillo), with other ministers of justice, whose number is not fixed and who discharge various duties. In some pueblos, when permitted by the government, a separate society or guild is formed with gobernadorcillos and officers of justice selected from the same. The gobernadorcillos have in their pueblo the entire municipal charge belonging to the authority conferred upon them by their appointment, with the special obligation of aiding the parish priests in everything relating to worship and the observance of religious precepts; in civil cases they have priority over judges up to the value of 3 taels, or 44 pesos; in criminal cases they proceed to the formation of a summary court, with which they account to the chief of the province; they are obliged to attend to collections on the royal account and others dictated by the ordinances of a good government, and they are permitted to collect certain duties which are fixed in their own titles.

In each pueblo there are also other officials called Cabezas de Barangay. Each Cabeza is charged with the collection of 45 or 50 tributes from the same number of families; he must reside in the same ward or street with them, look after the good order and harmony of the people under him, distribute among them the duties which are to be shared in common, settle their differences and collect their tribute, which he afterwards delivers to the gobernadorcillo, or to the administrator of the province through the proper channels. The Cabezas, by virtue of their office, are attorneys of their "barangais" (families under them) in all business affairs that occur in the community.

A counter admiral of the national navy is chief of all the naval forces of the archipelago. Ecclesiastical matters depend upon the Archbishop of Manila.

MILITARY AND POLITICAL DIVISIONS.

The following table, published in Manila by the Governor General, in 1873, will show the territorial division of the islands into politico-military governments, alcaldías mayores, and politico-military commands:

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LUZON.

Name of province or district.	Classification of authorities governing them.	Pueblos of residence of the chief of the province or district.
North of Manila:		
Manila	Civil governor	Manila.
Bulacan	Alcalde mayor	Bulacan.
Nueva Écija	Alcalde mayor	San Isidro.
District of Príncipe	Military commander	Valer.
Nueva Vizcaya	Politico-military governor	Bayombong.
La Isabela	do	Turnauini.
Rio Saltan	Politico-military commander	Saltan.
Cagayán	Alcalde mayor	Tuguegarao.
Pampanga	do	Bacolor.
District of Porac	Military commander	Porac.
District of Tarlac	do	Tarlac.
Zambales	Alcalde mayor	Iba.
Pangasinán	do	Lingayen.
Union	Politico-military governor	San Fernando.
Benguet	Politico-military commander	Benguet.
Abra	Politico-military governor	Bangued.
Ilocos Sur	Alcalde mayor	Vigan.
Lepanto	Politico-military commander	Cayan.
Bontoc	do	Bontoc.
Tiagan	do	Tiagan.
Ilocos Norte	Alcalde mayor	Laoag.
Islas Batanes	Politico-military governor	Santo Domingo de Vasco.
South of Manila:		
Cavite	Politico-military governor	Cavite.
Morong	Politico-military commander	Morong.
Laguna	Alcalde mayor	Santa Cruz.
Distrito de la Infanta	Politico-military commander	Binangonan de Lampon.
Batangas	Alcalde mayor	Batangas.
Tayabas	do	Tayabas.
Camarines Sur	do	Nuevas Caceres.
Camarines Norte	do	Daet.
Albay	do	Albay.
Corregidor Island	Politico-military governor	Corregidor Island.
Mindoro Island	Alcalde mayor	Calapan.
Calamianes Island	Politico-military governor	Taytay.
Balabac Islands	do	Balabac.
Romblón	Politico-military commander	Romblón.
Burias	do	Burias.
Masbate and Ticao	do	Masbate.

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VISAYA ISLANDS.

Name of province or district.	Classification of authorities governing them.	Pueblos of residence of the chief of the province or district.
	Politico-military governor of the islands.	Cebú.
Samar	Politico-military governor	Catbalongan.
Leyte	do	Tacloban.
Bohol	do	Tagbilaran.
Cebú	do	Cebú.
Isla de Negros	do	Bacolod.
Escalante	Politico-military commander	Escalante.

ISLAND OF PANAY.

Iloilo	Politico-military governor	Iloilo.
Concepción	Politico-military commander	Concepción.
Cápiz	Politico-military governor	Cápiz.
Antique	do	Vista.

MINDANAO.

	Politico-military governor of the island.	Cottabato.
Zamboanga	Politico-military governor	Zamboanga.
Misamis	do	Cagayán de Oro.
Dapitan	Politico-military commander	Dapitan.
Surigao	Politico-military governor	Surigao.
Bislig	Politico-military commander	Bislig.
Davao	Politico-military governor	Davao.
Cottabato	do	Cottabato.
Isla de Basilan	do	Isabela.
Islas Marianas	do	S. Ignacio de Agaña.

RELIGION AND EDUCATION.

The Roman Catholic is the established church in the Philippines, which contains one archiepiscopal see and three bishoprics. Most of the ecclesiastical authority is in the hands of the various religious orders—Dominicans, Agustines, Franciscans, etc.—who are the real rulers of the country, as their power among the natives far exceeds that of the various civil and military authorities. This power causes a great deal of jealousy, as is evidenced by the long record in the history of the islands of bitter controversies between the church and civil authorities. The religious affairs on the

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islands are far behind the age, and it would be of great benefit to the people, who are naturally devout, if they were infused with more modern ideas and methods.

The Spanish priests, friars of strict orders, come to the islands to stay, and, with scarcely an exception, do their duties faithfully and devotedly. Many of these Spanish curas have done much good work in the way of making roads and bridges and the building of churches, acting frequently as their own engineers and architects with far less unsightly results than one might expect from persons who are supposed to be more conversant with breviary and rosary than with rule and compass.

Priests of native extraction do not quite come up to the high standard of their Spanish confrères. They can not all live up to the severity of monastic rules. These native curas, moreover, suffer under the proverbial disadvantage which affects the prophet in his own country, and, lacking the strength of mind and tenacity of vow of the Spanish priests, sometimes seek consolation in diversions of not quite a clerical or monastic character.

Education is much neglected, and both the institutions for higher and primary instruction are antiquated in their methods and far behind the times. Although in nearly every town and village that is under the control of the government a school may be found, neither the quality nor quantity of the instruction given is satisfactory.

TABLE SHOWING PROVINCES, WITH THEIR POPULATIONS AND CAPITALS.

ISLAND OF LUZON.

Provinces.	Population.	Capitals.
Abra	49,702	Bangued.
Albay	296,850	Albay.
Amburayan	30,150	Alilem.
Apayaos	6,000	Bagubagu.
Bataan	52,000	Balanga.
Batangas	212,192	Batangas.
Benguet	15,932	La Trinidad.
Binatangan	.....	Binatangan.
Bontoc	24,502	Bontoc.
Bulacan	230,000	Bulacan.
Cabugaoan	.....	Cabugaoan.
Cagayán	112,357	Tuguegarao.

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ISLAND OF LUZON—continued.

Provinces.	Population.	Capitals.
Camarines	185,878	Nueva Cáceres.
Cavite	133,926	Cavite.
Cayapas	----------	Cayapa.
Ilocos Norte	156,900	Laoag.
Ilocos Sur	172,836	Vigan.
Infanta	10,200	Binangonán de Lampón.
Isabela de Luzon	46,846	Ilagan.
Itaves	15,208	Macogao.
Laguna	177,000	Santa Cruz.
Lepanto	19,422	Cervantes.
Manila	400,238	Manila.
Morong	42,748	Morong.
Nueva Écija	155,000	San Isidro.
Nueva Vizcaya	23,520	Bayombong.
Pampanga	250,000	Bacolor.
Pangasinán	295,105	Lingayen.
Príncipe	5,000	Baler.
Quiangan	29,800	Quiangan.
Tarlac	97,947	Tarlac.
Tayabas	105,576	Tayabas.
Tiagan	3,041	San Emilio.
Union (La)	119,421	San Fernando.
Zambales	87,641	Iba.
ISLAND OF MINDANAO.		
Basilan	12,000	Isabela de Basilan.
Cottabato	3,000	Cottabato.
Dapitan	12,653	Dapitan.
Davao	8,000	Davao.
Matti	9,764	Matti.
Misamis	113,695	Cagayán.
Surigao	95,775	Surigao.
Zamboanga	21,300	Zamboanga.
ADJACENT ISLANDS.		
Balabac	1,100	Balabac.
Batanes Islands	475	Santo Domingo de Basco.
Burias	1,600	San Pascual.
Calamianes	16,380	Cuyo.
Corregidor	569	San José.
Marianas Islands	9,770	Agaña.
Masbate and Ticao	26,497	Masbate.
Mindoro	106,170	Calapan.
Paragua (La)	45,000	Puerto Princesa.

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CAROLINE AND PALAOS ISLANDS.

Provinces.	Population.	Capitals.
Carolinas Occidentales	600	Santa Cristina.
Carolinas Orientales	4,500	Santiago de la Ascension.

VISAYA ISLANDS.

Antique	119,356	San José de Buenavista.
Bohol	247,745	Tagbilaran.
Capiz	189,171	Capiz.
Cebú	504,076	Cebú.
Concepción	19,342	Concepción.
Iloilo	472,798	Iloilo.
Leyte	270,491	Tacloban.
Negros Occidentales	226,995	Bacolod.
Negros Orientales	94,782	Dumaguete.
Romblon	38,633	Romblon.
Samar	200,753	Catbalogan.

SULTANSHIP OF JOLÓ.

Joló	17,112	Joló.

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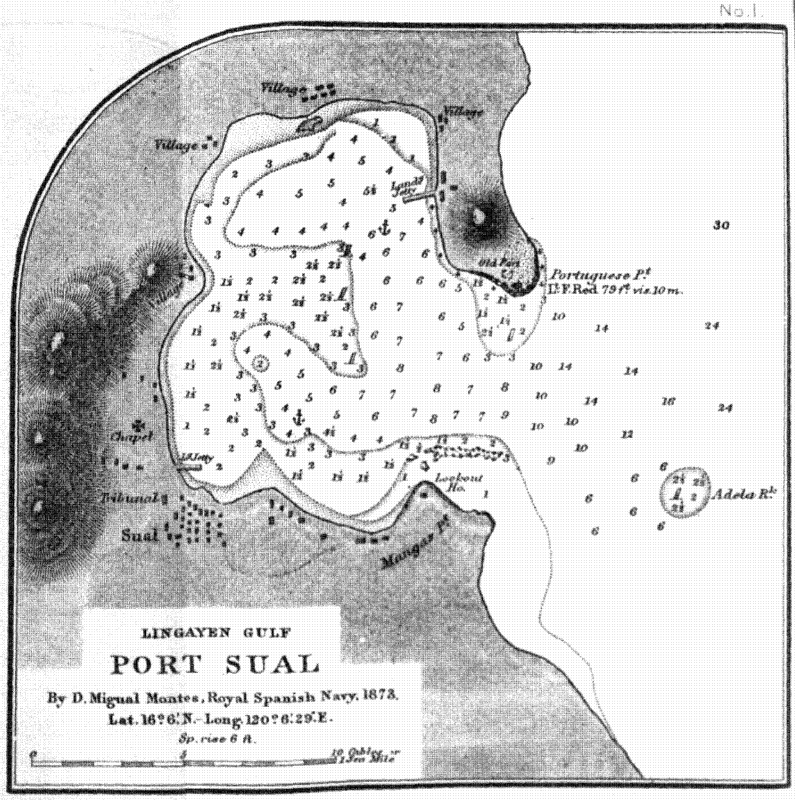
No. I.


Village
Village
Village
Village
Landg Jetty
Old Port
Portuguese Pt
Ill. F. Red 79 ft vis. 10 m.
Chapel
Lt Jetty
Tribunal
Sual
Lookout Ho.
Mangas Pt
Adela Rk
LINGAYEN GULF
PORT SUAL
By D. Miguel Montes, Royal Spanish Navy, 1873.
Lat. 16° 6' N. - Long. 120° 6' 29" E.
Sp. rise 6 ft.
0
5
10 Cables
1 Sea Mile

ISLAND OF LUZON.

This island, according to Crawford, is the most privileged one of the tropical zone, on account of its fertility, its abundant and wide rivers, its many large bays, and all its natural conditions. Its longitude from NE. to SE. is about 480 miles and its area about 41,000 square miles, to which may be added about 3,500 square miles, as the total area of different islands belonging to it.

ITINERARY OF COAST OF LUZON—WEST COAST.

Cape Bojeador, which forms the northwestern extreme of Luzon, is a low point with a reef of breakers projecting from it. To the southward of the cape the coast is cliffy and fringed by a reef as far as 2 miles south of Dirikwi Creek; it then becomes low, with a sandy shore as far as Mount Kauit, which lies 16 miles south of the cape, the country in the interior being very high. In case of necessity anchorage can be got along this coast during the northeast monsoon.

The chain of high mountains inland, which commences near St. Fabian, in the Gulf of Lingayen (ch. 1, p. 35), extends parallel to the coast, gradually diminishing in height, and stretching more inland about 24 miles to the southward of Cape Bojeador, leaves a spacious plain fronting the sea. Another chain of hills begins about 7 or 8 miles from the shore, and stretches northward, parallel to the coast line.

Mount Kauit, on the crest of which are some trees, forms a conspicuous mark on this low coast. The river Laoag disembogues to the southward of the mount; its mouth is closed by a bar forming a bank, which extends some distance seaward; the town of Laoag stands near the bank of the river, about 4 miles inland.

The coast from Mount Kauit trends S. by W. for 8 miles, to Kulili Point, which is high, with a sandy shore, and thence continues S. by W. for another 8 miles, as far as Solot Point, off which is Badog Island. Midway between Kulili Point and Badog Island is Gan Bay, with reefs extending 1½ miles

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to seaward, and immediately north of Gan Bay is Port Kurrimao, a small circular bay, offering anchorage in 4 fathoms, sand. Coasting steamers call at Port Kurrimao monthly.

BADOG ISLAND, is low, thickly wooded, and surrounded by a reef. A passage, ½ mile wide, with 11 to 16 fathoms water in it, separates Badog from the mainland, off Solot Point. The coast intervening between Badog and Salomague Island, 9 miles to the southward, is rocky, with breakers projecting from it. Anchorage may be found in front of the river Kabugao, in 6 to 7 fathoms, sand, between the reefs of the coast.

Shoals.—A shoal, with 1¾ fathoms on it, lies 2½ miles NE. ½ N. from the north point of Salomague Island. Another bank of rock, with 7 and 8 fathoms on it, is situated 2½ miles SW. by S. of Badog Island and 2½ miles from the shore.

PORT SALOMAGUE is sheltered from all winds but those that blow between SW. and WNW. The north point is encompassed by a reef which stretches along the northern side of the port; and Salomague Island, of moderate height, lies about three-quarters of a mile from the point, with a reef projecting off it about a cable to the southwest. The south point, which separates Lapug Bay from Port Salomague, is also surrounded by shoals. West from this point, from 1½ to 2 miles distant, are rocky banks, with 3½ and 4¼ fathoms on the two nearest, and 1 fathom on the outer. The port may be known from the offing by a gap in some high mountains which overtop the rest of the chain on this coast. Salomague Gap resembles the Gap of Vigan, but is not so large, and does not approach as near the sea as that gap, which may also be seen bearing about SE. when a vessel is 12 or 13 miles west of Salomague Bay. When the Gap of Salomague bears about E. ¼ S., an east course will lead direct towards Salomague Island at the north point of the port, which should be approached in a large vessel bearing about east; and the reef off its southwest point ought to be passed close in 19 or 22 fathoms, mud, to avoid the rocky banks that lie to the westward of the south point of the port; she may then steer for the middle of the port, rather inclining toward the northern shore, and anchor in 8 fathoms. Farther in there is a shoal spot, which will be perceived in clear weather by the discolored water on it. The best berth to moor is in 6 or 7 fathoms, mud, opposite some rice magazines on the north shoal. Coast steamers call monthly at Port Salomague.

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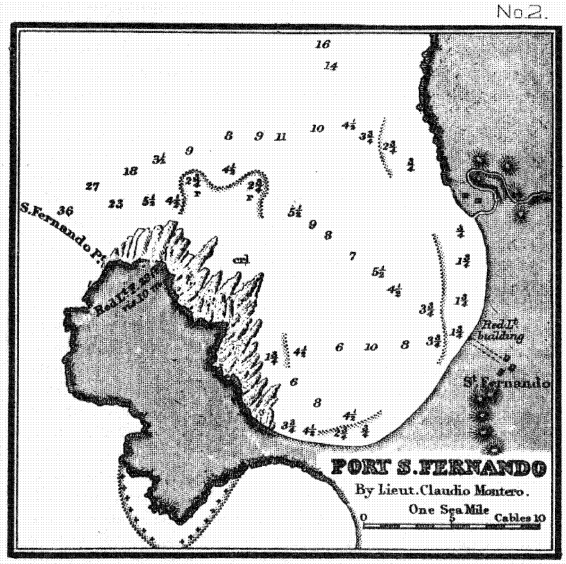
No. 2.


S. Fernando Pt.
Red Lt. building
St. Fernando
PORT S. FERNANDO
By Lieut. Claudio Montero.
One Sea Mile
0
Cables 10

LAPUG BAY (Salut-Salut Bay of the old chart, and Solon-Solon Bay of Horsburgh), immediately to the southward of Port Salomague, is sheltered from the same winds, but is not so capacious nor so deep. There are 5½ to 7 fathoms, sand, in it until near the shore. In front of the bay are two rocky shoals which will be seen in clear weather. One, with 1 to 2 fathoms on it, bears WSW. 2 miles from the north point of the bay, and has a passage on each side of 9 or 10 fathoms water; but that to the northward, between it and the north point of the bay, is too contracted. The other rocky shoal is in the middle of the entrance to the bay in front of the anchorage, which it shelters somewhat from the sea. The position of the bay will be recognized by Mount Bulagao, 3,629 feet high, situated to the southeast.

PINGET ISLAND is very low, covered with trees, and situated nearly a mile to the NW. of a projecting point; it has sandy shores and is surrounded by reefs which are steep-to on the western side. A rocky shoal lies south of Pinget Island and a mile from the coast. From abreast of the island the coast is low and sandy to Point Dile.

POINT DILE, in latitude 17° 34½′ N., is the most prominent point of this part of the coast, projecting far to the westward. Between it and San Fernando Point (ch. 2, p. 37) there are several towns along the coast which should not be approached within a distance of 3 miles; the country is formed of high double mountains, with low woody points to seaward in some places.

Vigan Road is sheltered from northerly winds by Dile Point, but exposed to the southward and westward. A patch of 3½ fathoms lies about 1½ miles offshore. The anchorage is in 10 or 12 fathoms, near the shore, with the river bearing about east; the bank shelves suddenly. About 9 miles inland to the ENE. of the road there is a chasm between two mountains, named Abra de Vigan, or Gap of Vigan, which is very conspicuous when viewed from the offing, and is a good mark to know this part of the coast. The city of Vigan is situated about 2½ miles to the NE. of the anchorage, on an eminence.

Solvet Bay lies 10 miles from Dile Point. The eastern shore of the bay is encircled by a reef which extends out a considerable distance. Small vessels can anchor in front of the town sheltered from all except southwest winds. San Estevan Point lies 6½ miles from Solvet Bay, and 2½ miles farther south is the small port of Santiago, 1 cable wide.

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Kandon Point is cliffy and surrounded by reefs. Vessels can anchor in the bay to the southward. The land in the vicinity is high and extends to the edge of the shore, terminating to the north, at San Estevan Point, in a slope ending perpendicularly.

The coast from Kandon Point trends south for 19 miles, then for 7 miles SW. to Diarigayos Point, which is low, covered with trees, and surrounded by reefs; thence it trends southward again for 13 miles to San Fernando Point (ch. 2, p. 37).

Caution.—During the northeast monsoon a strong current has sometimes been experienced, setting to the NNE., along this coast. Vessels proceeding southward should be prepared for this current, or they may find themselves embayed in Lingayen Gulf (ch. 1, p. 35).

PORT SAN FERNANDO (ch. 2, p. 37).—San Fernando Point is a small low peninsula surrounded by reefs, and forms, with the adjacent coast, two small anchorages; in the southern there are 6 to 6½ fathoms, rocky bottom; the northern is the port of San Fernando, where anchorage can be obtained in 5½ to 7 fathoms, fine sand, but it is exposed to winds from the northward.

The town is situated on the east side of the port on high land, and maintains frequent communication with Manila.

Supplies.—Game and fish are procurable. Water is obtained from wells.

Lights.—A fixed red light, elevated 29 feet above the sea, is exhibited from a light-house erected on San Fernando Point, south side of the entrance to Port San Fernando, and should be visible in clear weather from a distance of 10 miles.

The light-house, which is 20 feet high, consists of two iron supports above a small iron building on a base of masonry.

A fixed red light, to be elevated 13 feet, and bear S. 74½° E. from the light-house of San Fernando Point, is to be exhibited near the mole at Port San Fernando, and will be visible in clear weather from a distance of 4 miles.

Vessels entering the port should steer for the anchorage with this light bearing SSE. ¾ E., which will lead in the fairway of the entrance.

Fag Reef (San Fernando Shoal), composed of sand and rock, 1 cable in extent, with a least depth of 4½ fathoms, lies 2 miles NW. ½ N. of San Fernando Point. From it, the church of San Juan bears E. by N. ¼ N. and the church of San Fernando SE. by E. ¾ E.

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LINGAYEN GULF (ch. 1, p. 35) is about 30 miles deep, and about 20 miles wide across the entrance, from Santiago Island to San Fernando Point; on the east coast are the lofty mountains of Ilocos, with the peak of St. Thomas, 7,418 feet high; the west coast is of moderate height and tolerably level, gradually rising to the southward to a compact mountain mass. From the island of Santiago, for 12 miles to the SE., the west coast of the gulf is fringed by an almost continuous chain of islands and islets. The islands are, as a rule, low and wooded, and have shallow channels between them, only used by coasters.

Winds.—The prevailing wind during the greater part of the year is from SE. During the northeast monsoon, land and sea breezes become regular, and blow freshly, with clear atmosphere, but are interrupted by strong north and northeasterly gales; a bank of cloud seen in the north, with a clear sky and high barometer, is a certain sign of the commencement of a gale. In June the wind blows from SE. in the morning, with squalls off St. Thomas and San Isidro mounts; toward the evening it dies away with heavy rain and thunder, and clearing toward midnight leaves a light wind from the south, which sets in from the SE. with the dawn. From July to October there are usually gales from the SW. and west, lasting from three to fifteen days, accompanied by torrents of rain.

The worst period in the gulf is from the middle of September until the end of October, when typhoons occur.

PORT ST. THOMAS is formed by a bank which runs about 2 miles to the southward of the point, and has 1 to 5 fathoms on it. If intending to proceed to this port, steer to the southward until St. Thomas Mount bears nearly NE., then alter course for it, and as soon as the soundings decrease to 6 and 7 fathoms, turn to the northward for the anchorage. To the north of Port St. Thomas the coast of the gulf is high and steep-to.

The coast.—From St. Thomas the coast trends SSE., and is high and mountainous as far as St. Fabian, where two rivers disembogue. Thence the coast line runs WSW. for 4 miles to Binlok River, and then 2 miles farther to Dagupan or Binmalei River, both arms of the river Agno. The country is low and fertile, and produces rice, maize, indigo, sugar cane, cotton, and nipa wine.

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Dagupan, or Binmalei River, has 7 to 8 feet on the bar at springs, and a town of the same name situated close to its mouth. Small vessels from the town of Lingayen pass out by this mouth. The town of Lingayen (ch. 1, p. 35) is near the coast, and the tower of its church forms a conspicuous mark on this shore. There is frequent communication between Dagupan and Manila. From Dagupan the coast trends WSW., and then W. by N., forming the head of the gulf.

Light.—A fixed red light, elevated 29 feet above the sea, is exhibited on the northeast side of Dagupan Harbor entrance, and should be visible in clear weather from a distance of 5 miles.

PORT SUAL (ch. 1, p. 35), situated 2 miles to the southward of the high islet Kabalitian, has good anchorage, muddy bottom, at its entrance; a sailing vessel might be warped into the port, should circumstances render it necessary.

The port is a little over a mile long, north and south, and nearly a mile broad, with depths of 4 to 8 fathoms; the entrance, however, is narrowed by rocks and reefs to the breadth of about 2½ cables, while an extensive coral bank, with 6 to 18 feet water over it, fills up a large portion of the port. The eastern edge of this bank is marked by three beacons.

The land about Portuguese Point, the northern point of entrance of the port, appears like an island when viewed from a distance of 7 or 8 miles; the point may be recognized by a small round tower on its bluff, and between it and Kabalitian Island the ground is foul with rocks just awash. A reef extends 2 cables from Portuguese Point; it is always covered, and the sea breaks upon it only when the wind sets in. There is a beacon near the south edge of this reef. Mangas Point, the southern point of entrance, has rocks extending nearly 3 cables from it, but they are always uncovered, and may be approached to half a cable. In the southwest part of the port is the village which has a church and a small landing jetty.

Adela Rock, with 12 feet water and 6 fathoms close around, lies ½ mile east of Mangas Point. This rock is marked by a beacon.

Tides.—Springs rise 6 feet.

Light.—A fixed red light, elevated 79 feet above the sea, visible through an arc of 240° or between the bearings S. 10½° E. and N. 49½° E., is exhibited from a light-house erected on Portuguese Point, at the entrance to Port Sual, and should be seen in clear weather from a distance of 10 miles.

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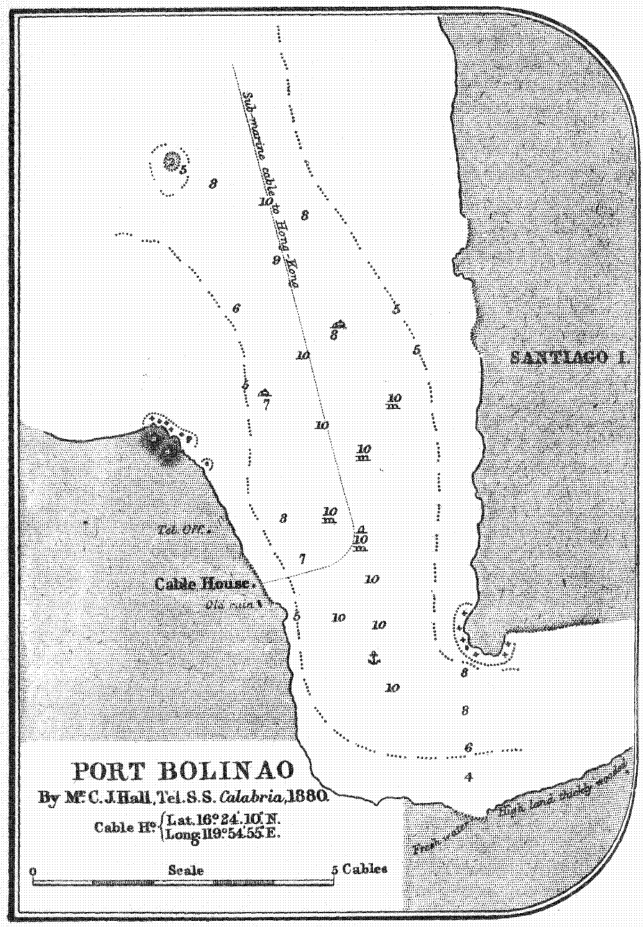
No. 3.


Submarine cable to Hong Kong
SANTIAGO I.
Tel. Off.
Cable House.
Old ruin
PORT BOLINAO
By Mr C. J. Hall, Tel. S.S. Calabria, 1880.
Cable Hs. Lat. 16° 24' 10" N. Long 119° 54' 55" E.
0 Scale 5 Cables
Fresh water
High land thickly wooded

The light-house, 20 feet high, is constructed of iron, and painted light gray; a watch tower in ruins is near it.

Supplies.—Coal is brought from Lingayen to Sual at $18 per ton. Water can be procured from a stream in southwest part of the port.

Directions.—When approaching the port, keep about 1½ or 2 miles from Kabalitian Island, steering for Mangas Point (ch. 1, p. 35); pass the outer rock off that point at the distance of half a cable, and then steer for the church, taking care to avoid the large coral patch, the southern edge of which lies between the northeast point of the port and the church; anchor in 5 or 4½ fathoms.

A British vice-consul resides at Sual, and there is frequent communication with Manila.

Kabarruyan Island, the southeastern of the large islands on the west side of the gulf, is 6 miles long, NNE. and SSW., moderately high, and covered with wood. These islands are surrounded by reefs which extend as much as 3 miles from land; therefore a berth of at least 4 miles should be given to this coast. Between Kabarruyan Island and Port Sual the coast is intersected by bays with sandy shores, and there are some islands off it.

Port Bolinao (ch. 3, p. 41) is a narrow channel between Cape Bolinao and the low wooded island of Santiago. The shore end of the telegraph cable is landed here, near a small building situated close to the west shore; it is thence laid in a direction NE. by E. ½ E. nearly 2 cables to a red buoy moored in 10 fathoms water, thence to seaward in a N. by W. ½ W. direction. Mariners are cautioned not to anchor northward of this buoy when it bears between SE. and S. ¼ W., nor westward or southward of the buoy when it bears between east and NE. ¼ N.

As the coast of Santiago Island and also the islets which lie off it is fronted by shoals projecting about 2½ miles, vessels ought to give the north side of the island a good berth in the northeast monsoon, for a southerly current may be liable at times to drift them into Lingayen Gulf (ch. 1, p. 35) or near the shoals on its western side.

Silakwi Islet, NNW. of Santiago Island, appears wedge-shaped when seen from the westward, and to the southeast of it are several small rocky islets. A reef of coral extends 2 miles round this group.

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A shoal with 8 fathoms on it lies 4 miles NE. of Silakwi Islet, and another with 7 fathoms on it lies 6½ miles NE. by E. ¼ E.

Cape Bolinao is the name given to the northwest extremity of the part of Luzon Island which forms the west coast of the Gulf of Lingayen. It is of moderate height, thickly wooded, and may be seen in clear weather about 24 miles; it slopes gently toward the sea, and has Piedra Point on its west side.

Piedra Point (Cape Bolinao of the old charts) is moderately high, steep-to, and sterile in appearance; it is the most western point of Cape Bolinao. A semaphore station has been established on the point. From Piedra Point the coast fringes with shoals and reefs, trends NE. by E. for 7 miles to Cape Balinhasay, near which stands the town of Bolinao.

The coast from Piedra Point to Caiman Point is level, of moderate height, and sterile aspect, with a steep beach fronting the sea, and may be seen in clear weather about 24 miles. This part of the coast is bold to approach, having no bottom at 50 fathoms within a mile of it in many places; there are soundings near the beach in some of the small bays, where a small vessel might anchor occasionally, but there is no safe place of shelter for large vessels.

Caiman Point has a reef projecting to the SSW., but the channel is safe between it and Culebra Island. The coast for 30 miles to the southward of this point, as far as Point Palauig, is indented with several deep bays filled with shoals, projecting beyond the points that form their respective entrances.

Dazol Bay, extending between Santa Cruz and Caiman Points, has several shoals situated about 1½ miles from shore. The channel between Culebra Island and Caiman Point leads to Tambove Roads and also to the port of Santa Cruz. The latter port is only used by coasters, and is approached from the northward between Hermana Major and a small islet 3½ miles east of it. The passage between the two Hermanas, although wide, is reported to be dangerous.

Tambove Road.—East of Caiman Point is a small bay, and east of this is Tambove Road, extending 4 miles east and west, 2½ miles deep, and open only to southerly winds. At the bottom of the bay is Dauli Point, and 2 miles SE. of Dauli Point is a bank with 6½ feet of water over it.

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The depth at the entrance of the bay is 18 fathoms, with 13 and 6 fathoms at the anchorage.

After passing between Caiman Point and Culebra Island steer to the east, giving a berth to the reefs off the next point; when the bay is well open steer to the northward for Dauli Point, but until in soft mud it will be improper to anchor, for rocks are scattered over the bottom where it consists of sand.

Wood and good water may be obtained here.

Culebra and Hermana Islands.—Culebra, or Adder Island, is small, with trees on it, and a sandy beach; on the south side there is a reef. The passage between the island and Caiman Point is $1\frac{2}{3}$ miles broad, clear of dangers, and with 60 fathoms water in it. Hermana (Sisters) Islands are low and woody, with conspicuous sandy beaches. Hermana Major lies about $5\frac{1}{4}$ miles southward of Culebra, and is surrounded by reefs. To the north of it is a reef 3 miles long NNW. and SSE., with rocks above water, between which and the island there is a channel with $4\frac{1}{2}$ fathoms in it. Hermana Menor (Makalira) lies 3 miles SSE. of Hermana Major and W. of Santa Cruz Point, with which it forms a channel, having 8 fathoms water in it; it is about 1 mile in diameter, with reefs on its west and south sides and a patch of sand on its north side.

The coast.—Santa Cruz Point is low and covered by mangroves; a reef projects $1\frac{1}{3}$ miles from it toward Hermana Menor. Between Santa Cruz Point and Arenas Point, $6\frac{1}{2}$ miles to the southward, the coast recedes, forming a bay into which three rivers discharge; it then runs south for 4 miles to Bani Point. All this part of the coast is fronted by shoals extending 5 miles offshore.

Sabalai Bank, 3 miles long, north and south, and 2 miles broad, is situated $1\frac{1}{2}$ miles to the NW. of Arenas Point; it is a rocky shoal awash at its eastern edge, with from $1\frac{1}{2}$ to $5\frac{1}{2}$ fathoms water over it in other parts. Between Sabalai Bank and Arenas Point are several pinnacles with $2\frac{3}{4}$ and 4 fathoms on them.

Tortuga Bank, about 2 miles south of Sabalai Bank, is 2 miles in extent east and west, with a least depth of $2\frac{3}{4}$ fathoms.

Ports Masinglok and Matalvi, situated between Bani Point and Makalaba Island, are separated by San Salvador Island and the reef which extends to the east of it. Bani Point is

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low and sandy, with patches of mangroves on it; a reef projects 1 mile SSW. from it, and nearly joins the shoals awash, which form the northern side of the entrance to Port Masinglok.

Salvador Island is of moderate elevation, thickly wooded, and has reefs extending ⅔ of a mile to the NW. The channel between Salvador Island and the reefs, extending from Bani Point, is 4 cables broad, with depths of 27 to 15 fathoms, and a depth of 16 to 14 fathoms is maintained to before the town of Masinglok. The channel south of the island is about 3½ cables broad in the narrowest part; it has a depth of 25 to 15 fathoms in it, and leads to Port Matalvi.

Port Masinglok.—The anchorage in front of the town is bad, as it is open to the NW., and the channel leading to it is narrow and lined with reefs. The space southeast of Salvador Island is foul and strewn with rocks, but anchorage can be obtained in a bay on the east side of the island, in 5½ to 6½ fathoms, protected from northerly winds. North of Port Masinglok and east of Bani Point is Oyon Bay, which runs in 2 miles ENE., with depths of 6 to 8 fathoms, mud; the entrance is blocked by a circular reef.

Port Matalvi, which is well protected, is formed between Matalvi Island and the coast to the southward; it extends 2 miles east and west, and has a mean breadth of ½ mile. The best anchorage is in 8 fathoms, mud, in the middle of the port. Water can be obtained from a spring south of Luan Island. Makalaba Island, at the entrance of the channel leading to Port Matalvi, is circular in form, with a sandy shore on its east side, and reefs which extend ⅔ of a mile from its north and south points.

The coast.—From the southern point of Matalvi Port the coast trends south to Palauig Bay, and is very low, sandy, and bordered by reefs. Palauig Bay is 2⅔ miles wide at its mouth, 1 mile deep, and open to the NW. The town of Palauig is situated on the south shore.

Palauig Point is bordered to the northward by islets, rocks, and shoals, which make this point dangerous to approach.

Palauig Reefs consist of various shoals extending 4½ miles offshore between Iba and Palauig Point. The southern reef, named Kinabakbagan, with 1½ fathoms water over it, extends 1¼ miles; the northern and largest, with very little water over it, lies off Palauig Point. Between these two are several shoal patches, the outer one having only 2½ fathoms on

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it. It will be prudent to give this part of the coast a berth of 6 or 7 miles.

Iba Point, lying 6 miles from Batalan Point, is surrounded by a coral reef extending northwest to Point Palauig. Southeast of Iba Point is the town of Iba, capital of the Province of Zambales, situated 2½ miles from the mouth of the river of the same name. Anchorage can be obtained south of the 1½-fathom shoal which fronts the mouth of this river.

Batalan, or Guai Point, 6 miles SSE. of Iba Point, is surrounded by a reef which extends out 3 cables. Mount Batalan, formed by two hills, the highest of which is 1,847 feet, dominates the point, and is an excellent mark for this coast.

Inland a double range of high mountains runs nearly north and south, and between these and the coast there is an extensive flat plain named Playa Honda. Of the inner range, Mount Pinatubo reaches a height of 6,040 feet.

Shoals.—At 5½ miles south of Batalan Point and 2 miles from the coast is a pinnacle rock with 4½ fathoms on it, and at 9 and 11½ miles S. ½ W. of the same point are two other shoals with 9 fathoms over them.

The coast from Batalan Point trends about S. by E. for 21 miles to Kabangan Bay, and then turns to the SW. to Point Kapones. Barranca Colorada is a very slightly salient point formed by a flat-topped, reddish-colored hill situated on the sand. Between Batalan and Barranca Colorada shoal ground extends in places 5 cables from the shore. Between this point and Kapones the coast is bordered by a sand beach, near which there are little plateaus of shoal water, very steep-to.

Point Kapones is the most western point of this part of Luzon, and therefore important to vessels proceeding to and from China, and passing close to this coast. It bears north, distant 60 miles, from Cabra, or Goat Island, and is high, bare land, of reddish aspect, having three islands to the NW. of it; the largest of these, Great Kapones, lying with its outer point 2¼ miles WNW. from Point Kapones, is 8 cables long WNW. and ESE., and has rocks around it; the other two islands, extending 4 cables north and south, lie 7 cables NE. by E. from Great Kapones, nearly mid-distance between it and the coast.

Light.—On Great Kapones Island, at 328 yards N. 59° E. from the western point of the island, there is exhibited a flashing white light, showing a flash every thirty seconds; it is

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visible through an arc of 306°, or between the bearings of S. 62° W., through east, and N. 64° W.

The light is elevated 228 feet above high water, and should be seen in clear weather from a distance of 23 miles.

The light-house, 53 feet high and constructed of brick, is square in shape, and the keeper's dwelling stands at the southwest corner of it.

Soundings.—About a mile outside Point Kapones the depth is 42 or 44 fathoms; from 40 to 35 fathoms will be found within a mile of the shore, between this part of the coast and the north point of Port Subig, and generally 45 to 50 fathoms about 3 or 4 miles off.

The coast from Kapones Point trends S. by E. ½ E. 8 miles to Port Silanguin; it is high, rocky, indented by three small bays fronted by islets, and backed by a range of high mountains extending NE. and SW.

Port Silanguin (ch. 4, p. 46) is about half a mile wide at its entrance, and 2 miles deep, having tolerable shelter from all winds, except from west and SW. The southern point is formed by a high, round, bare island, joined to the mainland by a narrow reef of rocks. The depth in the entrance is 18 fathoms, decreasing gradually to the anchorage, a little inside, near the beach on the south shore, which is the best berth.

About a mile SW. of the south entrance point of Port Silanguin are six islets, called Farallon on the chart, adjoining each other, and surrounded by rocks; the outer one lies about 1 mile SW. ¼ W. from Point Silanguin. Rocks are reported to extend 1 to 1½ miles to the westward of these islands.

Water.—There are two streams of fresh water at the head of Port Silanguin, and a spring of good drinking water.

The coast between Port Silanguin and Port Subig is high and moderately steep-to.

Port Subig (ch. 4, p. 46) has Grande Island at its entrance, to the westward of which is the safe passage into the port; for the passage to the eastward is intricate and lined by reefs. This port stretches 7 miles inland, and forms two excellent harbors, one on the east side, named Port Olongapó, and the other at the northern extremity, opposite the village of Subig; here vessels may be sheltered from all winds in 7 to 10 fathoms, mud.

The islands in the port are surrounded by reefs, which extend one to two cables; and a rocky shoal, with 2¾ fathoms on it, is situated at the head of the port, 4 cables SSW. from

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Point Kabangan. In proceeding to the inner part of the port, steer along the western shore, which is clear of danger.

The extreme of the reef extending off Point Kubi, at the entrance to Port Olongapó, is marked by two white beacons and a buoy surmounted by a ball. Caiman Shoal, within the port, is also marked by a white beacon and a buoy surmounted by a ball. A black beacon marks the part of this shoal which is awash at low water.

There is frequent steam communication between Port Subig and Manila.

Port Binanga, or Minangas (ch. 4, p. 46), is the first bight to the southward of the entrance of Port Subig. Small vessels may anchor in 5 fathoms sheltered from all winds, excepting those from west and WSW. The course into it is east and E. by N., about mid-channel between the points, to avoid the shoals projecting from them, and there are 4 fathoms, fine sandy bottom, inside, within a short distance from the shore.

The coast.—From Port Binanga the coast trends south for 4 miles and is low, wooded, and bordered by a reef which, NW. of the town of Moron, extends as far as a mile out from the shore. Thence the coast runs SE. for 4 miles to Napo Point, off which there is an islet joined to the point by a reef. From Napo Point the coast trends ESE. for 4 miles, and then nearly south for 7 miles to Luzon Point; thus forming a bight, named Bagak Bay, at the head of which is the town of Bagak. The shore of this entire bay is very low. Anchorage may be had off the town of Bagak, near the mole, in 5½ to 11 fathoms.

Luzon Point is rocky and peaked, of moderate height, and bordered by a reef which extends out 1 cable. The coast from this point trends in a general direction nearly SE. by E. ½ E. for about 7 miles to Los Cochinos, and is indented with several small bays. Guai Bay, the largest of these, affords good anchorage during the northeast monsoon, and is frequented by vessels waiting for a fair wind to enter Manila Bay. Reefs extend from the entrance points of the bay; the depth between the reefs is 5½ to 11 fathoms, and 4 fathoms farther in, but it is not necessary to enter the bay to be well sheltered.

Los Cochinos, or Lechones, are five low rocks above water which extend ½ mile south of the southwest point of Mariveles Port; they are steep-to, with the exception of one rock covered by 5 feet of water, which rock lies 1 cable S. 9° W. of

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the easternmost Cochino, Monti Islet. Los Cochinos Point is the SSE. extremity of a little peninsula conspicuous by two hills which command it.

From Port Subig to Los Cochinos the coast is in general evenly steep, and may be approached within 1 or 2 miles in some parts; but it will be prudent to give it a wide berth, as rocks or foul ground extend a considerable distance from some of the points.

SUPPLIES AT MANILA.—The quantity of coal for steaming purposes kept in stock varies considerably, but it can always be obtained, and is taken on board from lighters in the bay. In 1887 the price for Cardiff coal, placed on board, was about $10 per ton.

Water can be purchased, and is brought alongside in steam water tanks. The water in Manila, excepting the rain preserved in tanks, is brackish and very hard.

Fresh beef is very bad, it being spoiled in the killing. If much be required the bullocks should be purchased and killed on board. The price is about 10 cents per pound. Vegetables are very moderate in price, but not plentiful.

Corregidor or Mariveles and Caballo are two islands dividing the entrance of Manila Bay into two channels, known respectively as the North and South channels. Corregidor, the principal island, 639 feet high, lies near the north shore and is 3¼ miles in length east and west. On its north side is a small bay, protected by breakwaters, affording good anchorage for coasting vessels; and from Buri Point a reef extends to the southward toward Caballo Island.

There is fresh water to be procured under a steep cliff at the western end of this island, but the landing is on a stony beach, and inconvenient.

Caballo Island is a high bluff rock 420 feet high, of considerable size, partially covered with verdure, lying about ¾ of a mile southward of Buri Point, the eastern extreme of Corregidor. A reef and shoal water extend about 5 cables from its western extreme.

The channel between the two islands is about 4 cables wide and has a depth of 7¼ fathoms in the middle; the tides in it are strong.

Lights.—On the summit of Corregidor stands a light-house 60 feet high, from which is exhibited, at an elevation of 639 feet above the sea, a white light, revolving once every ten or

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twenty seconds, and visible in clear weather from a distance of 20 miles. A fixed white light is shown from the white tower on the West Mole Head, at the entrance to the bay on the north side of the island.

A fixed white light is exhibited from low spur on the northeast part of Caballo Island, 27 feet above high-water mark, and is visible 6 miles. This light is concealed by high land to seaward between the bearings of NNE. and E. by N., and screened toward the north shore between the bearings of S. by W. and ESE.

A fixed white light, showing a sector of green light through an arc of 75° or between the bearings of N. 47° E. and N. 28° W., is exhibited from a light-house on Sangley Point (ch. 5, p. 49), the outer extreme of the low land at the entrance of Port Cavite. It is elevated 29 feet above high water, and is visible in clear weather from a distance of 6 miles. The light is shifted as the point extends.

A fixed red light, elevated 51 feet above the level of the sea, is exhibited from a white circular tower, on the northern mole at the entrance of Pasig River, and should be visible in clear weather from a distance of 9 miles.

A fixed green light is exhibited from an iron stand painted red, on the battery of the southern mole, entrance of Pasig River. This light is elevated 16 feet above high water, and should be seen from off the entrance of the river between the bearing of NW. and SE. at a distance of 1 mile; it bears south from the red light on the north mole.

Corregidor Island light, Manila Bay, has been replaced by a provisional light of the same character, but of less power, pending the installation of a new permanent light to be exhibited on and after August 1, 1897.

The new light will be a flashing white and red light showing white and red flashes alternately every ten seconds. The light will be 633 feet above the sea, 42 feet above the ground, and visible 36 miles in clear weather.

Soundings from 50 to 40 fathoms will be obtained when within 7 or 6 miles of Corregidor, decreasing gradually to 27 or 26 fathoms about 2 miles to the westward of it.

Between Corregidor and the north shore the depths are 50 to 48 fathoms within $\frac{1}{4}$ of a mile of the island, 26 fathoms in mid-channel, decreasing quickly to 16 or 15 fathoms, stony ground, within $\frac{1}{2}$ mile of the north shore.

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La Monja, the Nun, or Maycock, is a high rock, bearing from Corregidor light W. ¾ S., distant 3 miles, with 27 fathoms water within ¼ of a mile of it all round. The soundings from it decrease regularly to 20 fathoms within ¼ mile of the north shore and deepen to 29 or 30 fathoms near the northwest part of Corregidor, close to which there are two rocks, one of which is perforated.

El Fraile (the Friar) Rock or Islet, which appears like a sail, lies 3¾ miles S. ½ E. from Caballo light, and nearly 2 miles from the south shore of the bay. Close around it are depths of 10 and 11 fathoms, increasing to 17 and 23 fathoms at a short distance to the westward.

Port Mariveles, on the north side of the entrance to Manila Bay, is about a mile wide and 1½ miles deep; with good anchorage, sheltered from all but southeast winds. Vessels of any size may moor here, and procure excellent water. Some rocky islets, Los Cochinos, with a rock awash just outside them, project ½ mile off the southwest point of entrance. Vessels may anchor in 17 fathoms, with the village bearing NW. by W., or they may run farther into the bay if necessary, the bottom being good holding ground and the anchorage safe. This is a convenient place for vessels to touch at when in want of wood and water, the former being an expensive article at Manila.

From Port Mariveles the coast trends east to Point Lasisi, then NE. to Point Limai; between the two latter points the shore is fronted by foul ground, and between San José and Real points, fishing stakes extend 2 miles from the land.

Shoal.—A shoal of 12 feet water, on which the American ship *Sea Witch* grounded in 1884, is reported to lie with Kaukauve Point bearing west, distant 6 cables.

Limbones and Karabao islets are two rocky islets on the south side of the entrance; between them is Patungan Cove, which runs in 2 miles to the SSE. From Limbones Islet the coast is high and cliffy as far as Marigondon River, which forms the boundary of the highlands of the Sierra de Pico de Loro.

A semaphore station has been established on Point Restinga, 1 mile east of Karabao Island.

St. Nicholas Banks are two shoals lying midway between Caballo Island and Port Cavite (ch. 5, p. 49). The outer shoal, nearly a mile in extent, is the larger of the two, and has but 5 feet water on its shoalest part. From its outer or northern

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edge, in 11 feet water, Corregidor light bears W. by S. ¾ S., and Cavite church E. by N. ½ N. Within a ship's length to the northwestward there are 13 and 15 fathoms water, the soundings being no guide in approaching it because the bank is so steep. La Monja Island, in line with the northwest point of Corregider Island bearing W. by S. ¾ S., leads north of the St. Nicholas Banks.

A beacon has been constructed on the northwest head of the northwestern of the two shoals forming St. Nicholas Banks in Manila Bay. The beacon stands in 13 feet of water at low water and consists of a base of concrete showing 12 feet above low water, in the form of a truncated cone, and surmounted by an iron tower 23 feet high, on which will be placed the lantern for the light which is to be established.

SOUTHWEST COAST.

Although this coast is out of the ordinary track of vessels passing up and down the China Sea, yet it is of importance when proceeding to or from Manila, inside the Lubang Islands. Vessels navigating along it should keep near the shore, in order to escape the tides which run from the entrance of Manila Bay to the southwestward.

From Limbones Island the coast trends S. by W. about 7 miles to Point Fuego, and is intersected by various bays. It is elevated, rocky, and very steep-to, with several islets in its vicinity.

Port Jamilo, situated about 4½ miles to the southward of Limbones Island, is on the southeast side of the bay of the same name, and runs in about 1⅓ miles to the eastward; the entrance is about 4 to 5 cables in breadth, with depths of 16 and 14 fathoms, decreasing gradually toward the interior, where the soundings are 5½ to 6½ fathoms, sand and mud.

The best anchorage is on the north side, in 6½ and 7½ fathoms. Mangroves grow near the mouth of the river, which discharges at the head of the port, the shore of which is low.

Soundings.—The soundings off this part of Luzon are deep and irregular, 30 to 110 fathoms, and afford but little or no warning when approaching the dangers, close to which are 17 to 60 fathoms; consequently the navigator will have to approach the coast with proper care and caution.

The coast.—Point Fuego is moderately high and rocky, with an islet off its north side. Two other islets, connected

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by a reef, lie $1\frac{1}{3}$ miles SSE. of the point, and have a pinnacle rock, awash at low water, on their eastern side.

Nasugbu Bay, about 5 miles to the southwestward of Fuego Point, is formed by low land, with a dark, sandy shore, which is steep-to and wooded. About the middle of this bay the river Lian discharges; on the bar is a depth of 2 feet at low water. The town of Nasugbu, containing 3,600 inhabitants, is situated on the right bank of the river. Anchorage during the northeast monsoon can be obtained in front of the bar of the river Lian, in $5\frac{1}{2}$ to $7\frac{1}{2}$ fathoms, sand.

Shoal.—A rocky shoal, 1 cable long, east and west, and $\frac{1}{4}$ of a cable broad, with $4\frac{1}{2}$ feet water over it at the eastern extremity, lies 4 cables from Nasugbu Point; from the shoalest part, Fortune Island bears W. $\frac{1}{4}$ N., Point Talin S. $\frac{1}{2}$ W., and Point Fuego NNW. $\frac{3}{4}$ W.

Talin Bay, lying to the north of Talin Point, is $3\frac{2}{3}$ miles wide and about $1\frac{1}{3}$ miles deep, but open to the NW., and foul. Its shore is composed of alternate rocky cliffs and sandy beaches.

Talin Point is of moderate height, of rocks and short sand beaches which serve as a base to several pyramidal hills very slightly wooded; it is surrounded by a reef to the distance of one cable.

The coast.—Two miles to the south of Point Talin is a little bay (Matabukai); from here the coast trends south for 8 miles to Point Kalatayan, and is very low, with sandy shores and mangroves; it is also intersected by several estuaries, and is fronted by a reef which extends 2 miles to seaward. Soundings of 14 and 17 fathoms will be obtained $\frac{1}{2}$ mile from the edge of the reef.

Cape Santiago.—The southwest extremity of Luzon Island is moderately high, wooded, and surrounded by a reef which extends about a cable from the shore, and dries. The soundings at the edge of the reef are 4 to 5 fathoms, deepening abruptly to 44 and 55 fathoms at a distance of half a mile.

Light.—There is a semaphore station on Cape Santiago, in connection with Manila, and a light-house will shortly be commenced.

Minerva Rock.—Vessels passing eastward of the Lubang group and approaching Cape Santiago, or St. Jago, the southwest point of Luzon, should be careful to avoid the Minerva Rock, which seems not to have been noticed by navigators

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until the *Minerva*, of Alloa, Captain Robertson, bound from Sydney to Manila, struck on it at 2 a. m. September 10, 1834, although an American ship had been wrecked on it several years previously. It is said to be a coral rock, having 17 fathoms water near it, and bearing from Cape Santiago SE. ½ E., distant 4 or 5 miles.

The channel eastward of the Lubang Islands, and also between them and Mindoro, is frequented by the Spanish vessels when going to or coming from Manila. The *Samarang* worked through this channel easterly, and Sir Edward Belcher remarks: "It is important to remind seamen that from about 4 to 6 a. m. those who frequent this coast state that sudden heavy squalls may be expected offshore, and as vessels are compelled to carry a press of sail to make progress, they should shorten before they round Kalavite; and this especially applies to close working to get through the channel between it and Lubang. Even with caution a flurry took two jib booms in succession between 6 and 10 a. m. The advantage gained by this channel, which is free from danger as to pilotage, was manifest, as it enabled us, having cleared the channel at 3 p. m., to reach the entrance of Manila Bay with a free wind at 10 p. m."

Fortune Island, situated 6½ miles SW. of Point Fuego, is about a mile in extent, bare, and steep-to, with some rocks off its southeastern side. Sir E. Belcher observes: "The island is safe to, and, like Cabra, requires but the seaman's attention."

Simo Banks, about 14 or 15 miles northward of the Lubang group, consist of two banks, with a least depth of 8 fathoms on them. The western bank extends 2 miles north and south, and lies 12 miles W. ½ N. from Fortune Island. The eastern bank extends NE. and SW., and bears W. by N. 8 miles from Fortune Island. There are irregular soundings, 21 to 109 fathoms, near these banks.

Lubang Islands are a detached group of six islands that front the southwest end of Luzon and the northwest end of Mindoro. They are uninhabited, with the exception of Lubang Island, which in 1879 had a population of about 3,000. The only safe anchorage for vessels during all seasons is the port of Tilig, situated on the northeast coast of Lubang Island.

Cabra, or Goat Island, the outer or westernmost island of the Lubang group, extends 2 miles from NW. to SE., and is a

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low, flat, wooded island, with a reef projecting ½ cable from its north and northeast sides.

Sir E. Belcher remarks: "Some doubt existing as to the true position of the dangers reported to extend off this island, a day was devoted to establish this turning point of the navigation of these seas."

The *Samarang* grazed the island on its eastern side, rounding to and anchoring off its southern face. The distance usually observed in passing land is the only question to be noticed here. No dangers requiring express caution exist. It has also been passed by the *Samarang* very close on the west side, much within the range that any merchant vessel could try without the appearance of danger. In the voyage of H. M. S. *Sulphur* it is observed: "Both the *Starling* and *Sulphur* shaved the surf line of Cabra without obtaining soundings; therefore, the dangers reported to lie to the northward of this island are incorrectly stated."

The channel between this island and Lubang is about 1½ miles broad, and may be navigated without fear, as the reefs on the north side of Lubang always show. In this channel the flood sets to the north and the ebb to the south.

Light.—Near the western extreme of Cabra Island is exhibited a group flashing white light every minute, the duration of each flash being eight seconds, the interval between each two flashes of the same group seven seconds, and the interval between the groups thirty-seven seconds. It is visible seaward through an arc of 268°, or from the bearing of S. 49° W. to N. 39° W.

The light is elevated 217 feet above the sea, and should be seen in clear weather from a distance of 22 miles.

The light-house, 67 feet high and constructed of brick, is square in shape, with sloping base, and keeper's dwelling attached on its eastern side.

Lubang Island, extending about 16 miles nearly NW. and SE., is the largest and most important island of the group; it is high in the middle, but low at each extreme.

Its coasts are protected by a reef which extends about ¼ of a mile from the shore; the southwest coast is rocky. On the eastern and northeastern sides are several bays, more or less protected, but difficult to make, owing to the shoals and reefs by which they are inclosed.

Port Tilig, on the northeast coast of Lubang, is the only safe anchorage for vessels in all seasons; it is sheltered from

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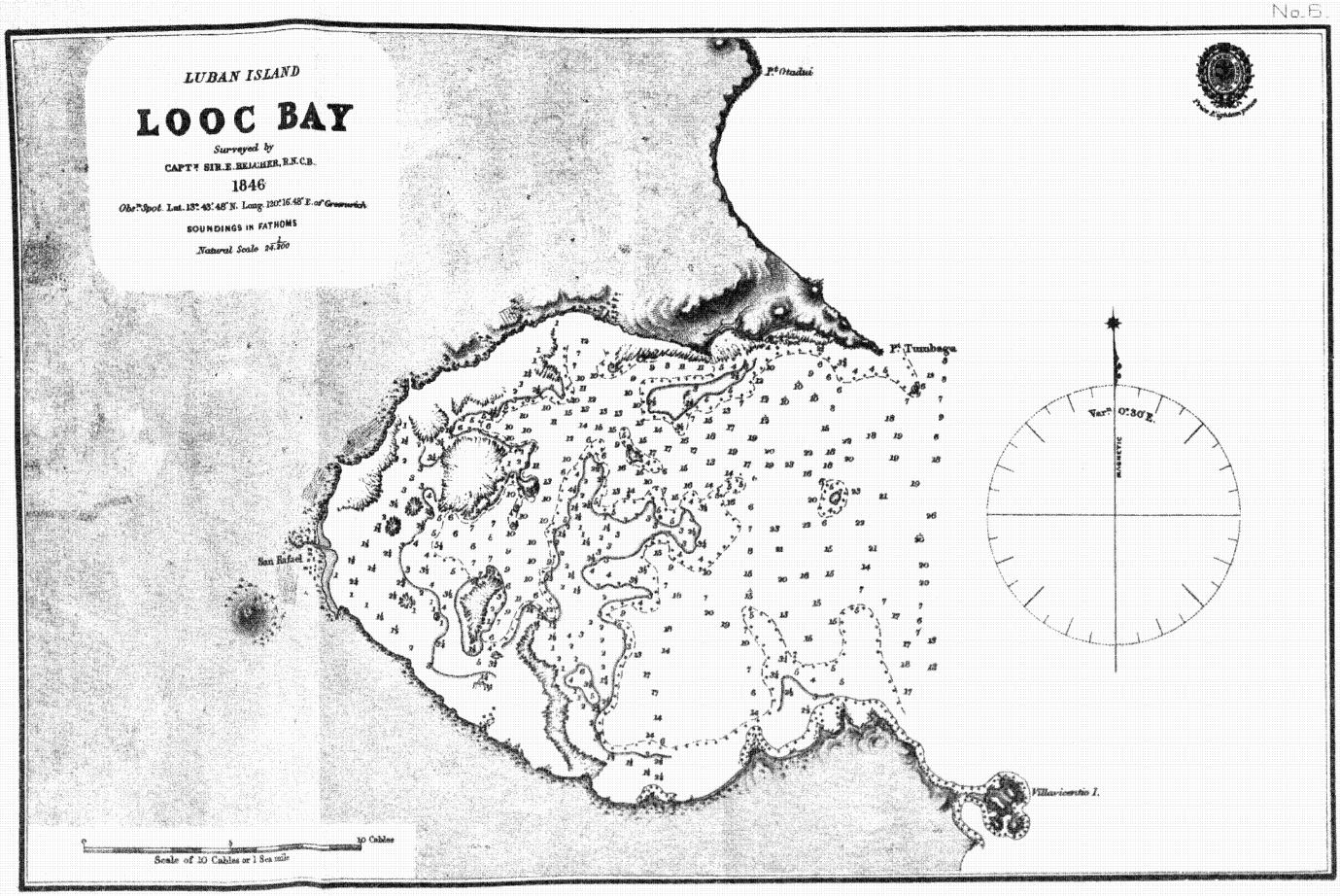

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all winds and completely protected from the sea. The holding ground is excellent. The entrance faces the NNW. and is beaconed by the reefs on which the sea breaks during rough weather. In the entrance there are depths of 14 to 5½ fathoms in low water, in mid-channel, and the western shore can be approached until the anchorage in front of the bastion is reached, in 5½ to 3¾ fathoms, mud and sand. The bottom of the bay is occupied by a shoal in the shape of a half moon, showing at low water, which divides the port into two distinct anchorages.

The San Vicente bastion is situated on the western point of the entrance; it is a square tower of rough stone, upon the parapet of which a wooden house has been erected.

Ingress and egress, unless in very favorable weather, owing to its being on a lee shore, is questionable for a sailing vessel.

Cattle, pigs, and poultry can be obtained at moderate prices, also a fair supply of water. There are no vegetables, and fruit is very scarce.

Tides.—The tides are complicated. It is high water, full and change, in Port Tilig at 9h. 30m.; springs rise 5 feet.

Luk (Looc) Bay (ch. 6, p. 55), on the east side of Lubang, is thus described by Sir E. Belcher: "On the eastern end of Lubang Island, and covered by Ambil Island, is the very snug port of Luk, which affords safe retreat in the event of accident in passing Kalavite or during the navigation of Verde Island Passage. It is pretty free from dangers at the mouth, and good holding ground will be found in depths between 10 and 20 fathoms. Within the former depth it suddenly shoals, and several lines of coral ledge bar the inner depths of the bay from direct access, although excellent shelter would be found by a vessel moored between these barriers to which they might easily be conducted. At the village a brisk rivulet supplies most excellent water, but boats can not fill except at high water."

In approaching the bay caution must be observed, as a 3½ fathoms patch is marked on the chart about 2½ miles to the eastward of the southern horn of the bay. Water, as well as wood, is easily procured, but bullocks, stock, vegetables, etc., are at the same (or higher) prices as Manila.

From Luk Bay the coast trends to the NW. about 7 miles to Port Tilig, and is generally fringed with reefs. There are

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some small bays on this coast, but they only afford protection among the reefs for small vessels with local knowledge.

Ambil, or Amul Island, lying to the east of Lubang, is about 4½ miles east and west, and is formed by a conical mountain about 2,500 feet high with a plain on its western side. The northeast coast is high and rocky, with an open bay, in which are depths of 10 to 11 fathoms; on the west side is a bay ½ mile broad in which anchorage can be obtained in 4 fathoms, mud; a reef extends 2 cables from the shores of this bay.

The passage between Ambil and Lubang is clear, but caution is necessary on account of the reefs, which contract the channel to one-half its apparent breadth. The flood tide sets to the south and the ebb to the north through this channel.

Afuera Bank, to the north of Lubang Island and 2½ miles from Port Tilig, extends 1½ miles from east to west and is ¾ of a mile broad, with depths of 2 to 4 fathoms over it. From the bastion of Tilig the shoalest part bears between N. ¾ W. and N. by W. ½ W.

Ambil Bank, a crescent-shaped shoal, is 2 miles in extent, with depths of 4 to 5½ fathoms on it, and a patch of rock in the center, with 2 fathoms water over it. It lies NW. of Ambil Island and close to it, the channel between the edge of the bank and the NW. point of the island being 4 cables broad.

Malavatuan Island, 3 miles to the north of Ambil, is about 3 cables in extent NE. and SW., and covered with brushwood. It is steep-to, and has a passage 1½ miles broad between it and Mandani Island, with depths in it of 5½ to 7 fathoms. To the north and northwestward of this island are shoal patches on which the least water appears to be 6 fathoms, the soundings round about being 36 to 50 and 90 fathoms.

Mandani Island, 1 mile north of Ambil, is rather more than ½ mile in extent, and composed of two small hills of unequal height. On the southwest side is a shoal a cable from the shore; the other sides are steep-to.

Golo Island, a high but long narrow strip of land, 8 miles WNW. and ESE., with reefs off its northeast, east, and southeast points, adjoins the southeastern extreme of Lubang. The south side of Golo Island must be approached with caution; coral reefs extend about 1 cable from the shore. H. M. S. *Teazer*, 1872, anchored in 13 fathoms, mud, off this part of the

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island, with Cape Kalavite bearing S. ¾ W., and the southeast extreme of Golo Island SE. by E. ¾ E. About ¼ of a cable nearer the shore 4 and 5 fathoms, coral, were obtained.

The channel between this island and Lubang is 4 cables broad, with a rock nearly awash in its center. The flood tide runs to the south, and the ebb to the north through this channel.

Flying Cloud Rock.—The ship *Flying Cloud*, on the 7th of April, 1854, is reported to have struck on a sunken rock, with 6 to 12 feet water on it, and about 30 or 35 feet in diameter; it is said to lie in latitude 13° 28′ N., longitude 119° 34′ E. (approximate).

Cape Santiago is moderately high, wooded, and surrounded by a reef which extends about a cable from the shore, and dries. The soundings at the edge of the reef are 4 to 5 fathoms, deepening abruptly to 44 and 55 fathoms at the distance of ½ mile.

Light.—There is a semaphore station on Cape Santiago in connection with Manila, and a light-house will shortly be commenced.

Minerva Rock, on which the *Minerva*, of Alloa, is reported to have struck at 2 a.m., September 10, 1834, is said to be a coral rock, having 17 fathoms water near it, and bearing from Cape Santiago SE. ½ E., distant 4 or 5 miles. The rock was searched for unsuccessfully by the Spanish Hydrographic Commission under Capt. D. Claudio Montero, and has been erased from the Spanish charts.

Pagapas Bay, between Cape Santiago and Point San Pedriño to the northward, is very deep; the shore is fringed by a narrow reef with soundings of 7 fathoms near its edge. Anchorage may be found on the eastern side of the bay in 7 fathoms; the western part is rocky. At the bottom of the bay is the little port, Kalaboso, formed by a break in the reef; the entrance is difficult and it is only frequented by coasters.

Point San Pedriño is surmounted by a hillock; it is well wooded, and is encircled by a reef that extends to a cable's distance from the shore.

Balayan Bay, the great bay between Cape Santiago and Point Benagalet or Kalumpan, is clear of danger, with bottom of sand and mud, but the shores are so steep that a vessel must approach very close to get within 12 fathoms depth.

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Winds and tides.—The winds in this bay follow the monsoons generally; the land breeze blows nearly every evening. The flood stream makes to the southward and the ebb to the northward.

Balayan town, at the mouth of the river of the same name, is situated 6 miles to the northward of Point San Pedriño; there is anchorage to the eastward of the river in 3 to 6 fathoms, sand and rock, sheltered from all winds but those from the southward; only boats of light draft can enter the river, as the bar has only 3 feet of water over it at high water. Mount Balayan, which lies 3 miles NE. of the town, serves as a guide to the anchorage. The town consists of 25,000 inhabitants, and affords supplies of all kinds.

Taal lies 11 miles ESE. of Balayan; the coast between these two towns is low and sandy, but steep-to. This important town is at the entrance of the river Pansipit, into which vessels of 100 tons burden can enter. The best anchorage is to the north of the mouth of the river near the shore in 7 fathoms, sand, with the fort of Taal in line with Mount Makalog; it is sheltered from all winds from north to south through east. There are 7 feet of water at high water on the bar of the river, which flows from the lake of Taal and enters the bay about a mile from the town. The inhabitants of Taal, like those of Balayan, are engaged chiefly in agriculture, care of cattle, and in fishing; provisions are plentiful, and there is active commerce with the Province of Manila.

Point Benagalet, the western point of Kalumpan Peninsula, is a rocky bluff fringed by a narrow reef, which runs all around the southwest of the peninsula to near Point Cazador. This part of the coast is clean, with soundings of 25 fathoms close to; it is of regular height and covered with wood.

Point Cazador is the southern end of Kalumpan Peninsula, which separates the bays of Balayan and Batangas. It is formed by a tongue of land of regular height, covered with trees; off the point, and joined to it, are some rocks, and on its eastern side a narrow reef, with soundings of 3 to 11 fathoms at ½ cable distance, which soundings deepen abruptly to 65 fathoms at 2 cables from the southern part.

Batangas Bay, contained between Point Cazador and Point Matoko, 9 miles to the ESE., penetrates 9 miles to the northward; it is clear and deep, with steep coasts. From Point Cazador the coast for 6 miles to the NNE. is steep, rocky, and

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wooded; it can be passed without danger at a distance of ⅓ of a mile. From thence the coast is low, with sand beaches cut into by the little rivers Balito, Buang, Batangas, and Kalumpan.

Batangas River, which enters to the eastward and very near to the town of the same name, is so shallow that a canoe can hardly enter it at low water, and even at high water boats have a difficulty in going up it. There is a watering place up the river at a little distance from the mouth, and farther up the river divides it into two branches; one branch is directed to the eastward, and with some windings passes close to the town of Batangas, at ¾ of a mile from the mouth; the other branch is to the southeast, and joins the river Kalumpan. To the west of the mouth there is a sand bank, which is mostly uncovered at low water.

Kalumpan River enters ¾ of a mile from the Batangas River. The bank which forms its bar is 2 cables wide, and uncovers at low water, so that it is difficult even for the lightest canoes to enter. The river brings down volcanic ashes and pieces of pumice stone, which together form both its banks and the bar, and cover part of the bottom in the neighborhood.

Coast.—From the river Kalumpan the coast trends to the southward, forming a small bay with a beach of sand and mangroves ending in a little point at 1½ miles from the river. The bank of sand which commences at the mouth of the river Batangas and borders all this part of the coast at a distance of 2 to 3 cables terminates here. This bank dries in places at low water; the depth near its northern edge is 12½ fathoms, mud; off its southwest extreme, 11 fathoms; and at its southern end 7 to 30 fathoms, which depth increases to 82 fathoms at less than 2 miles from the Batangas coast.

Pinamukan Point lies SSW. 3 miles from the little point where the bank ends; the coast between these points is of regular height and well wooded, with soundings of 5 fathoms close to the shore and 40 to 50 fathoms at the distance of 1 mile; to the eastward of Point Pinamukan it forms an angle, into which flows a small river of the same name as the point. Fresh water may be obtained from this river, but with difficulty, as it is necessary to go some distance up for it, and the river is very shallow. From Point Pinamukan the coast trends about SSW. for 3 miles to Point Matoko, and

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is of regular height and wooded, with detached rocks close to the shore.

Anchorage.—From Point Buang to Point Pinamukan the whole coast is formed of sand beaches, and vessels of all sizes can anchor off it, but necessarily very close to the shore on account of the great depth of water. Between Buang and Batangas a depth of 14 fathoms, mud, will be found at less than 2 cables from the shore, and this anchorage is preferred by the vessels that frequent the coast, on account of its good holding ground and its proximity to those two towns. In case of necessity, anchorage can be had on the coast east and west of the above road, but very close to the shore, and on bottom of gravel and rock.

Point Matoko, which forms the eastern extremity of Batangas Bay, is high, wooded, and precipitous, with one low point to the southwest. The coast to the eastward is rocky for 1½ miles, as far as a sloping point (Ilijan); it then forms a slight indentation, ending to the eastward in Point Arenas. In this bay small coasters find anchorage during the northeast monsoon, to avoid the ebb stream. The shores of this part of the coast are covered with the Palo Maria, a tree of the natural order *Guttiferæ*, which yields a valuable gum.

Point Arenas, the second point from Matoko, consists of sand and stones, which serves to distinguish it; it is low and clean, and the tidal streams rush past it with great force. Point Taliji, 1½ miles ENE. of Point Arenas, is not very prominent; it is rocky and wooded; to the westward of the point good water can be obtained, which comes from a valley of Mount Taliji. From here to Point Rosario, 2½ miles ENE., the coast is covered with trees, and shows a sandy beach fringed by rocks close to.

Rosario River debouches at 2½ miles from the point of the same name; it is ½ cable wide at the mouth, and the two points which form the entrance are both prolonged by a spit of sand ½ cable in length. The bar is 1 cable in width, and composed of sand and gravel with rocky patches on it; the entrance channel, which is between the bar and the northwest entrance point, is hardly ½ cable wide and only 3 or 4 feet deep at low water and 6 feet at high water, which depth diminishes farther up the stream. The river divides into two branches; fresh water can be obtained from the northern

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one, but canoes must be used to get it. From Rosario River to Malabrigo Point the shore is sandy, wooded, and of regular height.

Anchorage can be found in northerly winds for vessels of all sizes between Points Matoko and Malabrigo, but the shore is very steep, and at less than 2 cables from it the depth is from 8 to 13 fathoms. Bottom, coarse sand and gravel.

Punas or Lobo Point is the central point of the broad headland formed by the spurs of the Sierras de Lobo; Malabrigo Point is the western, and Malagundi (or Galban) the eastern point of this headland. The coast comprised between them is of moderate height and well wooded, rocky between Malabrigo and Punas, and bordered with sand beach and rock from here to Malagundi, off which point lies a little islet surrounded by rocks. Punas Point is remarkable by some red patches at a short distance from the beach, and the Sierras de Lobo, 3,363 feet high, serve to indicate the position from the southeast.

Sigayan or Lokoloko Point.—From Malagundi Point the coast shows the same sand beach for 4 miles to the little river Sigayan, where the high land of the Sierras behind Punas Point terminates. The river is narrow and shallow, and fresh water can be obtained at a little distance from the mouth. No description of Sigayan Point itself is to be found in the Spanish Derrotero.

Anchorage.—Vessels of all sizes can anchor between Malagundi and Sigayan, but close to the shore, which is very steep. The bottom is generally of coarse sand mixed with gravel.

SOUTH COAST.

Tayabas Bay.—From Point Sigayan or Lokoloko the shore is of the same nature for 4 miles ENE. to Point Bantiki, which is surrounded by rocks to the distance of 3 cables. The land behind these headlands is low and thickly wooded, and appears almost entirely sunk when seen from the neighborhood of the south point of Marinduque.

Kolokonto Bay.—At 1½ miles NW. of Point Bantiki is the southeast point of an inlet named Kolokonto Bay, the entrance of which is ⅔ of a mile wide, and which runs 1 mile inland; there is a small islet within it covered with trees, and in front of the entrance several rocks which mostly dry

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at low water. This inlet serves as shelter to small craft in southwest gales.

Coast.—From the northwest point of Kolokonto Bay the coast trends round to the northward; it is of regular height, wooded, and bordered by a sand beach. The River Nayun enters the sea at 6 miles from the last point. Its mouth is only ½ cable wide and 1½ fathoms deep at low water inside the bar, which itself is 2 cables wide with 3 feet least depth. At ½ mile up the stream from the entrance are several wooded islets, and here the river divides into two arms, both of salt water. The river Nayun offers shelter to small coasters, for at its mouth there are from 2 to 4 fathoms, lessening toward the islets.

Anchorage.—Vessels of all sizes can anchor off the coast between the mouth of the river and Kolokonto Bay, at ¼ of a mile from the shore, in 12 fathoms, mud.

TAYABAS RIVER.—The coast from the river Nayun is low, and bordered with sand beach as far as the river Tayabas, which is ¾ of a cable wide at the entrance; its bar is 2 cables wide, and in the entrance channel the depth is 1 fathom at high water, increasing within 2 fathoms. Native craft, called parados and karakoas, frequent this river, and armed launches sometimes go up as far as a place named Kota, at 1 mile from the mouth. The channel is easy to recognize by the stakes placed every year by the natives. Fresh water can be obtained at some distance from the mouth.

Reef.—A small shoal which uncovers at spring tides lies ½ mile SW. by S. of the mouth of the river; from this shoal a reef extends 6½ miles ESE., fronting the coast to a distance of 6½ miles from Bantiki Point, the eastern point of Pagbilao Bay, and nearly closing up the mouth of that bay. The soundings off the edge of this reef are irregular, from 3 to 11 fathoms.

Pagbilao Bay, which lies between Bantiki Point and Pagbilao Island, is of wide extent, but the available part of it is reduced by reefs to a circular space of about 1½ miles diameter. A pilot is needed to enter this bay, on account of the reefs which border the entrance near the southwest point of Pagbilao Grande; the depth of the channel is from 8 to 10 fathoms; and of the space within, from 3 to 5 fathoms, mud.

Pagbilao Grande Island is of triangular form and nearly joined to the main land, forming with it the bays of Pagbilao

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to the west, and Languinmanok to the east. Mount Mitra on the northeast part is 285 feet high. The southern point is steep-to, having a depth of 13 fathoms, mud, at 2 cables from it. This is the point to make for to enter the Bay of Pagbilao. Pagbilao Chica is united to the larger island by a strip of sand; it is crescent-shaped, forming to the westward the little bay of Kapaluan, at the mouth of which is 15 fathoms, sand, diminishing to 5½ fathoms, rock, at the edge of the shoal water that fills the upper part of the bay.

Languinmanok Port is reduced by reefs from the coasts on both sides to a channel 7 cables wide and 3 miles long, in which the soundings gradually lessen from 11 fathoms to 2½, sand and mud. Great care must be taken to keep clear of the reefs, which advance from both sides of the entry, narrowing the channel considerably, and of two shoals which lie in line with Languinmanok Vantay, and a rock 3 cables S. ½ W. of it. These shoals are situated respectively S. 50° W., and S. 30° W. of Point Tublig Mangayao.

Tides.—It is high water, full and change, at 1:30; springs rise 5¼ feet.

Coast.—The eastern shore of Tayabas Bay, from Languinmanok Port to Point Tuguian, is of moderate height, and fringed with reefs, which extend to 2 miles from shore in some places; on the edge of these reefs the soundings are from 3½ to 12 fathoms, and from 15 to 18 at a little distance. There is anchorage in 4 or 5 fathoms, sand and mud, off the mouth of a little river which enters near a bay north of Silankapo Point, 12 miles from Languinmanok. The town of Kalailayan is near this river.

Shoal.—There is a rocky shoal 2 miles NW. of Silankapo Point, extending 1 mile from NE. to SW., with 10 fathoms, coral, outside of it, and 8 fathoms in the narrow passage between it and the shore reef.

Pitogo.—At 5 miles ESE. of Silankapo Point is Mabio Point; and 2 miles ENE. of Mabio is the small town of Pitogo, with anchorage before it in 4 fathoms. When making for this anchorage, vessels must keep close to the western shore, as the coast to the eastward is very foul, with rocks at a short distance from it.

Tuguian Point.—The coast reef projects only ½ mile off this point, and anchorage can be found under the point in 9 fathoms, mud.

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Shoal.—At 3½ miles NW. ½ N. of Point Tuguian there is a rocky shoal of small extent, with 3½ fathoms off its southern edge, and 10 fathoms off the northeast side; there is a passage between it and the coast from which it is separated 1½ miles.

Caution.—In navigating this coast, it should not be approached within 3 or 4 miles. In the passage between Tuguian Point and the island Mompog the flood tide sets to the SE. and the ebb to the NW.

Katanauan Bay, 5 miles ESE. of Point Tuguian, is clean and offers shelter from northerly and easterly winds in 3½ to 7 fathoms, sand and mud. A river flows into it, and on the left bank is the town of Katanauan. The west point of the entrance is of sand, and the other mangroves. Both points send out reefs, the western to a distance of 1 mile, and the eastern to 2 miles.

Between Katanauan and Malanai, a distance of 6 miles, the depth is 9 fathoms, sand, at 1 mile from the coast.

Malanai Anchorage is in a bight of the coast ESE. of Point Ajus. A river enters the sea at the bottom of the bight, having on its left bank the town of Malanai (or Yendo), in front of which there is anchorage in 5 fathoms, mud.

Point Lipata is hilly and covered with mangroves and sand patches; a ridge of rocks extends some distance to the northward of it.

The coast between Malanai Bay and Bondog Point is fringed with rocks which extend to ½ mile from the shore to the northward of Ayoni Bay.

Shoal.—A rocky shoal, 1 mile in extent, with 3 fathoms water at the edge and 7 to 13 fathoms around it, lies about 2 miles NW. of Subunguin Point, and 3 miles from the coast. The channel between this shoal and the coast reef is 2 miles wide, clear of danger, and 17 to 24 fathoms deep.

PINAMUNTANGAN POINT.—Aguasa Bay, to the northward of Point Pinamuntangan, has rocks before its entrance. Pinamuntangan Bay, between Aguasa Bay and Point Pinamuntangan, is small and open to the west. It is bordered on its northern and southern sides by a beach of sand and mangroves; to the northward of the point is a depth of 11 fathoms, shoaling gradually to the shore.

The coast from Pinamuntangan Point runs 7½ miles to the SE. to Bondog Point, ending in a sandy beach with detached rocks near it.

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BONDOG HEAD (Cabezo de Bondog) is a mountain 1,250 feet high, visible in clear weather at a distance of 30 miles.

Point Bondog is the southern extremity of the peninsula between Tayabas Bay and Ragai Gulf; the vicinity is rocky, as is also the part of the coast to the NE.; but the lowland soon reappears, and continues as far as Point Arena. The face of the coast here presents several open bays with sandy beaches, offering good anchorages of sandy bottom; the depths in them decrease gradually to 8 fathoms at a short distance from the shore; the heights are wooded, and the plains afford good pasturage. There are several herds of buffaloes; and antelopes abound, which may be hunted without difficulty.

Shoals.—At 3 miles ENE. of Point Bondog, and 4 miles S. 60° W. of Point Arena, there is a rocky shoal; the anchorage NE. of it is good.

MARINDUQUE ISLAND, situated before the eastern entrance of Verde Island, is nearly circular, with its greatest diameter 24 miles. It is mountainous and elevated, having a range of hills on its eastern side running north and south, consisting of the mountains Tapian, San Antonio, and Marlanga. The soil is fertile, but it offers few resources, the principal production being rice.

There are two ports, of no great importance—that of San Andres, to the NW., and of Santa Cruz, to the NE.—and several small bays which offer shelter, according to the seasons, on the east, south, and west sides, but these anchorages are not very good, and the coast towns are very poor.

Port Banalakan, or San Andres, is surrounded by high wooded land, and vessels can lie inside in all security. The anchorage is confined, but the depth is good, 10 to 12 fathoms, mud. There is an inner harbor which can be entered by towing or warping through the narrow passage, hardly a cable wide, and obstructed by an islet in the middle of the channel. This inner basin is of $\frac{3}{4}$ of a mile extent, and of $5\frac{1}{2}$ to 8 fathoms depth, muddy bottom. A large vessel would find herself not only sheltered in it from all winds, but completely hidden, for it is entirely closed in, and its existence would not be suspected without previous knowledge.

Directions.—On entering or leaving Port Banalakan, the southern shore must be kept, at 1 cable length from which are 10 to 18 fathoms, in order to avoid a rocky patch of great extent off the north side of the entrance; this patch has $\frac{1}{4}$ of

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a fathom on it, and lies SE. of two islets surrounded by rocks that are before the entrance. The entire northwest headland of the island is foul.

Water is difficult to obtain, as it is necessary to go well up the river to obtain it fresh, and when there it takes a long time to fill the casks.

San Andres Islets are two islets which stretch rather more than a mile to the west of the northwest point of the island Marinduque. The distance between them is 1 cable, and the same between the nearest of them and the shore. These passages are foul, but the sea fronts are clear.

Point San Andres, the northern point of the island, is mountainous and very steep.

North coast.—Between Point San Andres and Point Santa Cruz, 8½ miles to the eastward, the coast is formed into two bays by Trapichihan Point. That to the westward, though lined with rocks, is deep, having 22 fathoms in the middle; that to the eastward is closed by a reef which projects between the islets off Point Trapichihan and continues as far as Santa Cruz, with soundings of 10 fathoms at its edge. Point Santa Cruz is low and covered with mangroves. A reef, with large rocks awash at low water, advances from its point a mile to the ESE. and forms, together with another reef that projects from the island Santa Cruz (Anibaya), the northern mouth of Port Santa Cruz.

Santa Cruz Port is only fit for small craft, but larger vessels can find anchorage, with sandy bottom, in the channels formed by the islands at the entrance, or, in case of need, they can penetrate farther by warping, but great care is required to avoid the detached rocks. The town affords but few resources.

Directions.—To enter by the north channel, bring the island Santa Cruz to bear SE., give sufficient berth to the reef that extends from it, and follow the channel to the south by soundings until the port is opened; the soundings are from 6 to 16 fathoms in the passage and 5 toward the anchorage, shoaling to 3 fathoms, mud, off the baluarte.

To enter by the east channel, pass the island Santa Cruz at one-third of the distance between it and Marinduque, which will give the deepest water; this channel is less tortuous than the northern one, and the soundings are more regular; the width is 1 mile from side to side.

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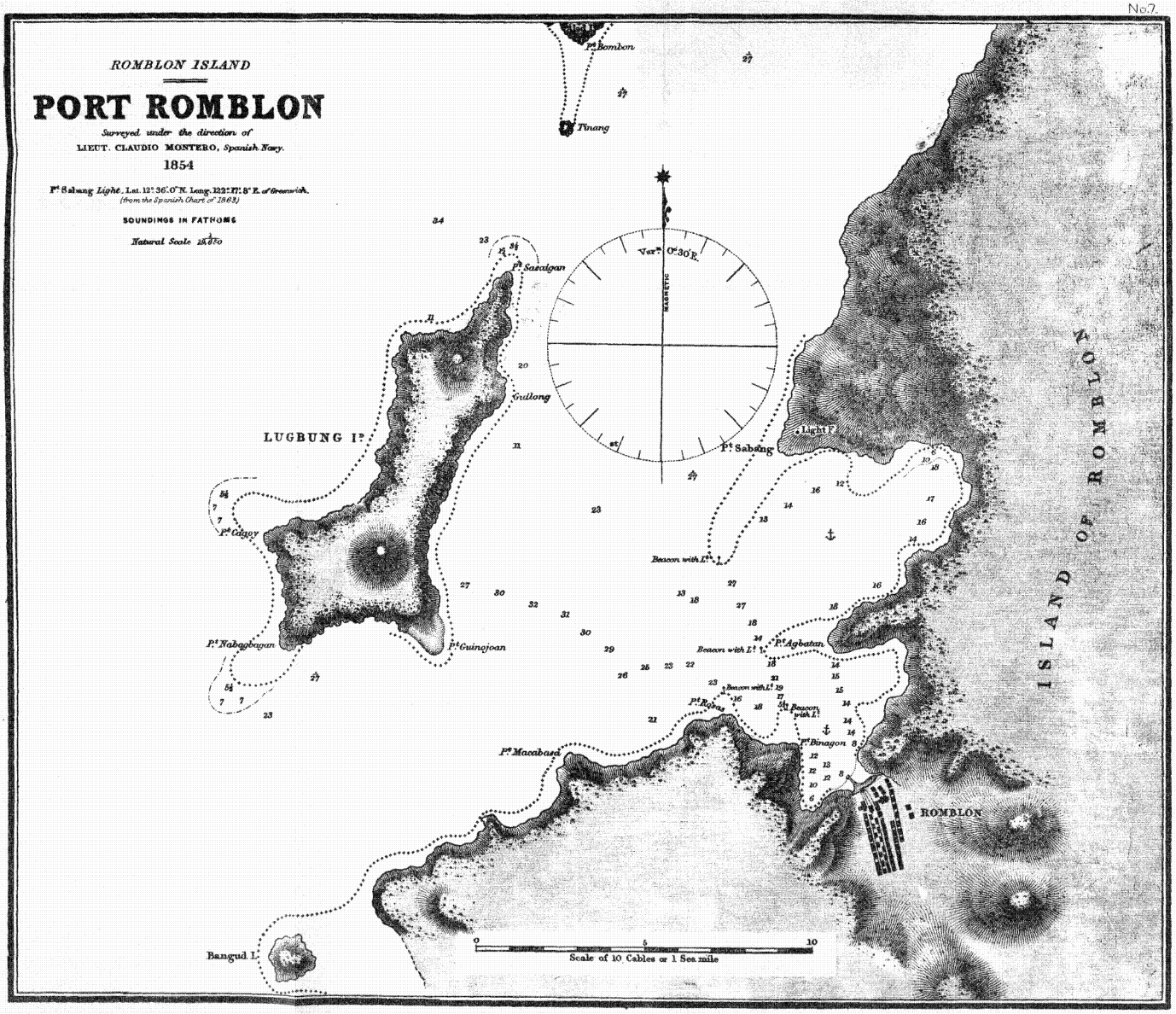

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ANIBAYAS.—This is the name of the group of three islands before the port Santa Cruz, Maniuayan, and Mompog. The two first are low to the westward, of regular height in the middle, and hilly to the eastward. All three are surrounded by reefs, which narrow the channel between them. These channels are only used by coasters. A vessel leaving Santa Cruz Port by the northern channel in order to go southward should keep all these islands on the starboard hand, giving them a berth of a mile, to clear their reefs, which project thus far, and she should not trust a smooth appearance of the water. If driven to take the passage between Maniuayan and Mompog, she should keep near to the latter island, for the reefs from Maniuayan approach to within ½ mile of Mompog.

Salomague Point, 8½ miles SE. of Santa Cruz, is the easternmost point of the island; it is low and covered with mangroves. The coast between these points is fringed with rocks to a distance of ½ mile out from it; the soundings at the edge are 6 to 11 fathoms, rock, increasing to 54, mud, at 2 miles from it. Between Salomague and Point Marlanga there is a bay, in the southern part of which, between points Kabuyok and Paniki, there is a good anchorage near the shore, in 12 fathoms, mud.

Marlanga Point is dominated by a high mountain, the northwest shoulder of which marks the commencement of the anchorage. The coast is safe from Point Marlanga to Point Saban (ch. 7, p. 67), and may be approached to within 2 cables, at which distance the soundings will be 20 fathoms. These two points are spurs of the above-named mountain.

Elephant Islet, about ½ mile south of Point Saban, is a steep sugar-loaf rock, with a few trees upon it. On the northeast side there is a little creek with a sand beach and 4½ fathoms depth. Between the islet and Marinduque there is 12 fathoms, sand. The French chart gives a little reef off Saban, but it must be small.

Tres Reyes are three islands of moderate height, peaked and clean, except the easternmost, Gaspar, which has rocks on its east side. Between these islets and Marinduque there is a safe passage if care be taken to avoid a shoal of 2½ fathoms nearer the coast of Marinduque than the middle of the passage.

Point Banod, or Gazan, is fronted by a reef which extends ½ mile to the SE., and joins the shore again off the town of

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Gazan; the 2½ fathoms shoal just mentioned seems to be a part of this reef, detached to the south. The town Gazan is 2 miles north of the point. The anchorage is on the open coast, at a distance from the beach, and quite exposed.

Point Kauit is low and sandy; a reef runs from it to the SSE. as far as Gazan Reef, but to the northward the coast, which is of sand beach, is clean as far as Point Datinuana, and to 3 miles beyond, and may be approached with safety; from here a sand bank with 7 fathoms at its outer edge stretches along at ½ mile from the shore as far as the southeast point of Port Banalakan.

BUAK RIVER AND TOWN.—The town is situated on the left bank at 1½ miles from the mouth of the river, which enters the sea to the southward of Point Datinuana. It carries on a fair trade with Manila. Steamers call here about once in a week or ten days.

Anchorage.—The anchorage is SW. of a stone fort at the mouth of the river, at 2 cables from the shore, in 5 to 12 fathoms, coarse sand.

Tidal streams.—In the part of the sea between Masbate Island and Mindoro the currents are not strong except off Point Arena, the southeastern extreme of Bondog Peninsula, where they acquire some force from the quantity of water that enters and leaves the Gulf of Ragai; but in Verde Island Passage the tidal streams reach a velocity of 3 to 4 knots, and the branches which pass on either side of Verde Island cause strong eddies at their meeting again, and at Point Escarceo even a partial reversal of the stream.

The flood streams from the China Sea through Verde Island Passage, and from the Pacific through San Bernardino Strait, meet and neutralize each other nearly in the meridian of Point Bondog, or in the line between Point Bondog and Romblon Island (ch. 7, p. 67). The ebb streams set in the reverse direction, *i. e.*, from Bondog Peninsula outward, and it has been observed that on coming to Point Bondog with a fair tide a reverse has been experienced on passing its meridian. The tidal hour of this point has not been determined.

Winds on the south coast of Luzon.—In Tayabas Bay and the Gulf of Ragai the land breeze which sets in during the night in both monsoons is generally feeble, but sometimes squally, thereby compelling a sailing vessel to anchor in order to avoid being driven off the coast.

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GULF OF RAGAI.—The Gulf of Ragai, included between Point Boudog to the west and Point Kadburauan (Panganiran) to the east, 43 miles apart, runs 65 miles inland to the NW., and, along with the River Viñas, which enters the gulf at its head, almost severs the island of Luzon in two at this part, separating the Province of Tayabas and Camarines Norte. The Gulf of Ragai is generally clear and deep. The port of Pusgo or Mayasas on the west coast and Pasakao Bay on the east coast are its most frequented anchorages. The entrance of the gulf is divided into two channels by Burias Island, with the islands and shoals off its northern end.

West coast of Ragai Gulf.—The coast between Point Arena and Port Pusgo is moderately high and steep-to, with soundings from 7 to 14 fathoms off it, except at the part opposite Alibijaban Island, where a reef extends along the coast for 3 miles; anchorage can be had off the coast generally, but not close in, as there are rocks close to the shore.

Sombokobon Bay, 5½ miles NNE. of Point Arena, is much frequented by native coasters. In the middle of the bay there is a rocky shoal, with a narrow channel between it and the shore. The north point of the bay ends in a reef, which projects to the SE. and forms a semicircle, offering shelter and anchorage in 3½ fathoms, fine sand. The town of Sombokobon is on the northwest side of the bay.

Alibijaban Island, 3½ miles north of Sombokobon Bay, is 2½ miles long, north and south, and ¾ of a mile wide; low, wooded, and surrounded by a reef which extends 1 mile to the southward and ½ mile out from the other sides, with irregular soundings near its edges; in the northern part of this reef is a little bay with a depth of 4 fathoms, and off the southern end there is a small anchorage with a depth of 14 fathoms. The channel between the island and the reef on the main coast opposite is 1¼ miles wide and 23 fathoms deep. From the most salient point of the reef Point Arena bears S. 8° E. and Point Gorda, north of Pusgo, N. 21° W.

Palad Bank, 5 miles north of Alibijaban Island, is a bank of sand 1 mile long, 10 feet above water, and surrounded by rocks. It can be seen in daylight from a good distance, and at a sufficient distance to avoid it on a clear night. The channel between the bank and the main coast is 2 miles wide and 12 fathoms deep.

Port Pusgo is a narrow inlet which penetrates 5 miles to the NW. The width between the southern entrance points

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is $1\frac{1}{3}$ miles, but the navigable space is considerably reduced by a shoal which extends along the main shore, and half way up the inlet there is only 1 cable width. The depth in mid-channel is $4\frac{1}{2}$ to 5 fathoms from the entrance to as far as 1 mile past the narrowest part, but in the inner harbor generally it is less than $1\frac{3}{4}$ fathoms deep. The town of San Narcisso stands at the extreme head of the inlet.

Shoal.—In the middle of the entrance, at $1\frac{1}{2}$ miles S. 25° E. of Point Pusgo, there is a rocky bank $1\frac{1}{2}$ cables in extent, covered by 10 feet of water.

Point Gorda lies $1\frac{1}{4}$ miles N. by W. of Point Pusgo, and is high and steep, with a flat crown. The reef, which from the interior of Port Pusgo fringes the coast, continues round Point Gorda to the northwest, at a distance of 2 to 4 cables from the shore. A shoal covered by $1\frac{3}{4}$ fathoms water lies 5 miles northwest of Point Gorda, and 1 mile from the shore.

Piris Bay, $13\frac{1}{2}$ miles NW. by N. of Point Gorda, is bordered by a shoal of mud covered by $1\frac{3}{4}$ fathoms water, which considerably reduces the available space; anchorage can be had in the northwest part of the bay in $5\frac{1}{2}$ fathoms. Point Lian, the northern point of the bay, is of moderate height and skirted by a reef which projects $\frac{1}{2}$ mile from it to seaward.

Point Kapuluan, 5 miles north of Point Lian, is surrounded by the reef which borders the coast for $2\frac{1}{2}$ miles to the northward. Kapuluan Rocks, $2\frac{1}{4}$ miles east of the point of the same name, form a shoal $\frac{1}{3}$ of a mile in extent, on which there are several rocks awash, with $4\frac{1}{2}$ to 14 fathoms near it.

Acha Shoal, 5 miles N. by W. of Point Kapuluan, is a rocky shoal 2 cables long, north and south, covered by 1 fathom water at its edge. It lies $2\frac{3}{4}$ miles from the coast and $1\frac{1}{4}$ miles from Sipalon Island, a low peaked island separated from the reef of the north coast.

Vinas River, which enters the gulf at the extreme head of it, is shallow, the depth at the mouth being only $5\frac{1}{2}$ feet.

East coast of Ragai Gulf.—Talkauayan Bay is $1\frac{1}{2}$ miles wide and runs $2\frac{1}{2}$ miles to the northward; the depth of water in it decreases gradually from 7 fathoms at the mouth to 3 fathoms at the head.

Katabanga Bay, 3 miles SE. of Talkauayan Bay, is nearly 4 miles wide between Points Guilbai and Bagutayok, and is lined with rocks. The depth toward the northern part is 11 fathoms. There is anchorage in the southern part near the little river Katabanga.

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Ragai Bay, between Point Omon to the north and Point Oktok and Saban Island to the south, offers good anchorage, sheltered in both monsoons, in depths of 17 to 1½ fathoms, mud. Sabun Island, 1 mile long, east and west, is almost united to Point Oktok at low water; its northern side is steep-to, but a reef projects 1 mile to seaward from the western point. The southern shore is foul.

Kaima Bay, included between Sabun Island and Point Bantuin or Galvanei, 8 miles to the SE., is bordered by a reef. There is an anchorage near this reef off the town of Bangon in 8 to 12 fathoms, and also in places nearer Point Bantuin, in 7 fathoms. Point Bantuin is high and steep, and only connected with the main coast by a strip of low land ½ cable wide. The two islets Galvanei are respectively ½ mile and 1 mile NW. of the point.

Coast.—From Point Bantuin (Galvanei) the coast trends SE. for 13 miles to Point Tanuan and is mountainous and bold. The river Tinagbud enters about midway between the two points; anchorage may be had off the mouth in 4 fathoms. A sharp peaked rock lies 2 cables from Point Buri, south of Tinagbud. Point Tanuan is steep, with a flat crown, and from this point the coast trends E. by S. for 5 miles, high, and fronted by sand beaches as far as Pasakao Anchorage.

Pasakao Anchorage is situated between two little flat-topped hills, the westernmost of which terminates in a mangrove-covered point and a reef which projects ½ mile to the SE. The best anchorage is in 3 to 4 fathoms, in front of the town, and north of the high flat islet Refugio, which lies ½ mile from the southern point. This little islet is surrounded by a reef 1 cable wide and steep-to, with soundings of 37 fathoms at a short distance to the southward. The channel between the islet and the coast has a depth of 11 fathoms. In taking this passage the islet should be kept closer than the mainland. Steamers call here fortnightly.

Coast.—From Pasakao Anchorage to Point Makoto the coast is high, steep-to, and bordered by sand beaches between the intermediate points. Anchorage may be had very close to the shore north of Point Sibono, 7 miles SE. by E. of Pasakao, in Jamuaron Bay, north of the point of the same name, in 6 fathoms; vessels can also anchor in the elbow which the

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coast makes at the town of Pantao, north of Point Kauanhahan. A shoal surrounds this point to a distance of 1 cable, and lines the coast to the bottom of the elbow.

Apud Shoal is a rocky shoal which uncovers in parts at low water and extends 1 mile W. and 2 miles NNW. of Point Apud.

Point Makoto is of moderate height, steep, with a flat crown, and is surrounded by a reef. A rocky shoal ½ mile in diameter, and covered by 3¾ fathoms, lies 1 mile NW. of the point. This shoal may generally be distinguished by the green and white color of the water above it. There is an islet southeast of the point, united to it by a reef.

The bay to the eastward of Point Makoto offers anchorage sheltered from the north and west. Care must be taken in entering it to avoid a reef which projects from Point Badian, the south point of the bay.

Point Kadburauan, or Panguiran, is low, wooded, and surrounded by rocks to a short distance, with a depth of 4½ fathoms near them.

Tides.—In the Gulf of Ragai the flood stream sets to the north and the ebb to the south. The range of tides at springs is 5½ feet.

Burias Island, at the entrance of the Gulf of Ragai, is a narrow island, 37 miles long, NW. and SE., and about 6 miles wide in the middle. It is roughly mountainous and thinly wooded; it is commanded by the lofty mountain Engaño so, situated nearly in the center of the island, and showing a cleft that divides the high land of the northern part of the island from the very low land of the southern part. The coasts are in general steep, and bordered in places by sand beaches. The island has two sheltered ports: Busin, at the northwest end, formed by Busin Island lying in front of a bay in the coast, and Busainga on the northeast coast of the island.

Burias Island and the islets and reefs in its vicinity have not yet been thoroughly surveyed. The main productions are rice, maize, and abaca (manila hemp).

There are several small islets and reefs off the northern part: Templo, 2½ miles NW. of Point Cueva, the northwest point of Burias, is 3 miles long, NW. and SE., and 1½ miles wide. There are detached rocks on its south side, and its north point is surrounded by a reef of ½ mile width. Sombrero, 1½ miles west of Templo, consists of two islets close

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together on a reef which extends a mile to the northwest and southeast of them. Arena, 7 miles SE. ½ E. of Point Arena, on Bondog Peninsula, is surrounded by a reef which grows out ¾ of a mile to the northward. A shoal, separated from this last-named islet by a channel ¾ of a mile wide and 12 fathoms deep, lies 1½ miles to the north of it.

Busin Island is 2½ miles long and 1 mile wide. A shoal projects from its northwest end to the islets Tinalisayan, and united with the reef that surrounds the little island Tanguigui 4 miles north of Point Cueva.

Detached shoals.—One mile north of Tanguigui there is a rocky head covered by 3½ fathoms of water, with 75 fathoms immediately north of it; and about 2 miles north of the northern end of Burias there is a rocky shoal ½ mile in extent, having less than a fathom over it.

Anima Sola is an islet 4½ miles N. 40° E. of the northeast point of Burias, surrounded by rocks.

Port Busin is formed by the channel 3½ miles long and 1½ cables wide that separates the island Busin from Burias. The western entrance of this channel is narrow and tortuous, and very dangerous for a sailing vessel; the northern entrance is preferable, as, though narrow, it is more direct, and its sides are steep-to. In a working breeze a vessel can keep well in mid-channel. The northern entrance may be easily recognized by the north cape of Burias, Point Colorada, which is higher than Busin Island, and shows yellow patches among the trees that cover it. The part of the coast also near the entrance may be recognized by the massive bluffs about it.

Lights.—In the Spanish list of lights a fixed white light is shown on Point Colorada, and another on the northwest point of the channel; but these lights are not maintained by the government, and are therefore not to be depended upon.

Anchorage.—The best anchorage is west of Fort San Pascual, at the entrance to the bay that opens to the south, on the coast of Burias. The depth at the entrance of this bay is 11 fathoms, lessening to 2½ fathoms, at ½ mile within the bay.

Fresh water can be obtained here.

Coast.—Between Port Busin and Port Busainga, 3½ miles to the SE., the coast forms a bay, from the western point of which a reef projects to the northward for 1 mile with 9 fathoms near its northern edge, narrowing into the coast again at the northern point of Port Busainga.

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Port Busainga is an inlet 1 mile long and 1 cable wide, including some bays which afford good holding ground in depths of 8 fathoms, sheltered from wind and sea. The wide space at the bottom of the port is shallow.

Lights.—The Spanish list of lights gives a fixed blue light on Point Piedras, the northwestern entrance of the inlet, but it is not mentioned in the Spanish Derrotero, and as it is not an official light it must not be depended upon.

Tides.—It is high water, full and change, at 0h. 30m. Springs rise 5½ feet.

East coast of Burias.—The bay, 5 miles long, SE. by S. of Port Busainga, appears to be filled with shoals; the remainder of the coast to the southward presents beaches off which there is anchorage on the open coast.

West coast of Burias.—Point Cueva, the northwest point of the island, is surrounded by a shoal 2 cables wide, from which a reef extends to Point Guinduianan 6 miles to the southward, advancing in some places to a mile from the coast. The remainder of the west coast is sandy, with shoals at no great distance from it, especially in the bend of the coast called Boca Engañosa, which is the highest hill in the island. The little islet Gorion is in this bend.

Caution.—When approaching Burias Island from the westward in thick weather, such as occurs in the southwest monsoon, the southern part of the island, which is low, may be hidden, and the slope of Mount Engañosa may be mistaken for it, and Boca Engañosa for the passage between Burias and Masbate, a mistake which has caused the loss of many vessels, and has given rise to the name "False." This error may be avoided by bearing in mind that the middle of the low part of the southern land of Burias is in line with Albai Volcano in Luzon on the bearing N. 38° E.

From Point Kadburauan the coast trends ENE. for 6 miles and is foul; the islet Lanuyan, distant 1 mile from the coast, is united to it by a reef which dries at low water. The coast then bends round to the SE., and becomes lower toward Marigodon, which is rocky and steep, with a flat top. There is anchorage between Point Marigodon and the town of the same name to the northward. From this point the coast trends SE. by E. for 8 miles to Point Putiao, and is low with shelving sand beaches affording good anchorage off it.

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DONSOL RIVER AND TOWN.—The river mouth is fronted by wide sand banks which extend to 1 mile from the shore, with soundings of 13 fathoms at the edge and 68 fathoms at ½ mile distance. The bar of the river has only 3 feet of water over it at low water; within the bar a depth of 5 to 11 feet is carried for a mile up the stream. The town of Donsol, on the left bank of the river, near its mouth, carries on a brisk trade with Manila, principally in abaca (manila hemp), palm mats, and cocoanut oil. Steamers call about fortnightly.

Port Putiao is a large but shallow inlet which can be entered by coasters only and at high water; sand banks on both sides reduce the available width to one-half, and at 2 miles from the mouth these banks unite, thus leaving only a depth of 3 feet here for communication with the inner port. The entrance points are 1 mile apart and are both surrounded by reefs, the reef round the western point extending 1 mile to the SE. The depth at the entrance is 2¾ fathoms, and at 1 mile farther in it is 1½ fathoms.

Palatuan Bay, to the eastward of Port Putiao, is shallow, the reefs on either side leaving only a narrow inlet 2½ fathoms deep. At the outer edge of the reefs the depth is 3 to 5½ fathoms.

Point Bantiki, the western point of the large port Sorsogon, is rounded, low, rocky, and wooded, with a shore composed of gravel and clayey cliffs. On the southern extremity there is a vantay. The rocky shoal that surrounds the point is very narrow, except on the side of Palatuan Bay.

PORT SORSOGON is the largest and best harbor in the strait of San Bernardino, and is a good refuge in case of a typhoon or a colla, and for effecting repairs. The entrance is divided into three channels by the islands Malumahuan and Bagatao. The channel between these two islands is the only one practicable for vessels, the others between the islands and the coast being narrow and shoal. A narrow shoal stretches from Malumahuan Island almost to the north coast of the port.

BAGATAO ISLAND.—A bank of fine black sand, with soundings over it of 12 to 14 fathoms, stretches 2 miles SW. of Bagatao Island, and offers anchorage to a vessel caught by bad weather and unable to reach the port.

The Boca Grande, or principal entrance, is 1¼ miles wide and irregular in depth, from 9 to 20 fathoms. The west coast of Bagatao Island is clean; the bottom on the Malumahuan

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side is shelving, with a depth of 4 fathoms at a distance of 2 cables to the east of that island. The channel is nearly 6 miles long, NE. by E., with irregular depths from 8 to 20 fathoms as far as Point Makugil, on the southern shore. A rocky shoal, covered by 1 fathom, projects off this point 1½ cables N. by E. The coasts and islands on both sides of this channel are clean, and the sea faces of the islets on the north side are steep-to, so that a vessel keeping in mid-channel is clear of all danger.

The inner port of Sorsogon is spacious, extending 9 miles ENE. toward the town of Sorsogon, with depths diminishing gradually from 9 to 2½ fathoms.

Anchorage.—Once past Bagatao Island a vessel can choose the anchorage suitable to her draft, but if she draws much water it is best not to make for the town of Sorsogon, as a depth of 3½ fathoms is reached at 4 miles from it. H. M. S. *Sphinx*, in 1861, anchored north of Bagatao Island in 8 fathoms, with Tinakos Island bearing S. 83° E. and Tumalaitai Fort N. 16° W.

Supplies.—There are many towns on the shores of Port Sorsogon, and beef, poultry, rice, and vegetables are all procurable. Horsburgh says that water is to be had on the eastern side of the harbor. Steamers from Manila visit the port about twice a fortnight.

Coast.—From the southern point of entrance to Port Sorsogon the coast trends S. by E. for 13 miles to Point Bulak, and shows broken ground in some places, though in general the shore shelves gradually into the sea by sandy beaches, before which vessels can find good anchorage. At 5 miles from Bagatao Island, according to the Spanish Derrotero, a scarped hill can be distinguished, which indicates a place where a bank covered by 5 feet of water projects to 1 mile from the shore. All this coast shelves out to 2 or 3 miles, with soundings of 15 fathoms at 1½ miles, and 30 fathoms at 3 miles.

Bulan River and Town.—The town of Bulan (formerly known as Gata) is situated on the right bank of the river which debouches south of Point Bulak. A vantay is erected on the sandy point of Bulak. The depth on the bar of the river is 4½ feet at low water, and greater upstream. Coasting steamers call here.

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Angas Point, 2½ miles SE. of Point Bulak, is high; Otake Bay, included between the two, shows a sandy beach and is 2½ to 10 fathoms deep.

Butag Bay, east of Point Angas, is about a mile wide, and runs 1 mile in to NE.; reefs extend from the points on both sides. The depth of water at the entrance is 14 to 16 fathoms, and in the middle of the bay 14 fathoms. The shores are wooded and in some places of considerable height.

Marinap Bay, the next bay to the eastward of Butag, is capable of containing vessels of good draft. The shores are sandy in some places, and covered with mangroves in others.

Between the southern point of Marinap Bay and Point Tagiran the coast is slightly indented with little bays, clean and deep, but not running far inland and offering but little shelter, with soundings of 25 fathoms near the intermediate points.

Tagiran Point, 9½ miles from Point Bulak, is a remarkable little hill, apart from high mountain range behind it, with a flat top on which is a plot of green clearer than the rest of the hill, and which can be seen at a great distance. There are three or four detached rocks about 40 yards from the point, with 5 fathoms of water close to them, and 13 fathoms at a short distance. A rivulet falls into the sandy creek on the east side of the point.

Tides.—In the channel between this coast and Tikao Island the tidal streams run with a velocity of not less than 4 knots.

Tikao Island is 23 miles long, NW. and SE., and 6 miles wide at its northern end, narrowing toward the extreme south point, San Rafael, from which a chain of islets and rocks extends toward Point Vigia in Masbate. The island is mountainous, and but thinly populated. It possesses two ports, San Miguel and San Jacinto, neither of them very good.

Port San Miguel is 1 mile wide at the entrance, and open to the NW.; the depth of water is 50 fathoms at the entrance and 45 to 25 fathoms within, but the plan shows very few soundings. The shores of the port are very steep, but a reef with three islets on it extends from the middle of the western shore to 3 cables NE. of the eastern islet; the reef is hidden below water and a part of it fringes the southern part of the bay.

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This port offers convenient anchorage in thick or bad weather, or to a vessel embayed under the islands San Miguel, and unable to reach Port San Jacinto, or the anchorages off Masbate.

The three islets which form a prolongation of Point San Miguel are very steep-to, but must be kept at a distance, as vessels are liable to be drawn toward them by the tides.

Tragdugan Bay, 7½ miles SE. of Point San Miguel, is open to the NE. and is skirted by a narrow reef which extends 2 miles to the NW. and fringes the coast to Port San Jacinto, 3 miles SSE.

Port San Jacinto is small and open to the east, but has good holding ground; the entrance may be recognized by a fort with rounded bastions on the southern point, with some conical hills behind it. The narrow bank that fringes the coast continues round the inside of the port, and the 3½ fathoms line of soundings passes within 3 cables of the northern point (named San Antonio on the plan and San Francisco in Spanish Derrotero), and within 1½ cables of the southern point (San José), reducing the actual width of the available harbor to about 3 cables. The depth of water lessens gradually from 16 fathoms at the entrance to 3 fathoms, mud, at the edge of the shoal of sand and mud at the bottom of the port. The town is on the point near the fort.

Anchorage.—The best anchorage is on the southern side in 9 fathoms, with Point Cosme bearing NNE. and the church and fort of San José SE. by E. ¾ E. Vessels arriving off the port at night, and not caring to venture in, may anchor before the port in 10 to 24 fathoms, but the anchor should be let go as soon as soundings show 24 fathoms, as the bank is very steep-to.

Water can be obtained at the wells and also at a river near.

Tides.—It is high water, full and change, at 6h. 30m.; springs rise 6 feet; the tidal stream is very weak.

Coasts.—The east coast of Tikao presents many little bays open to the east, in which anchorage can be had, as well as on the sand bank that borders the coast and which extends out about a mile from Biton Bay to Point San Rafael. The west coast is steep and rugged and has no good anchorage; a depth of 5½ to 7 fathoms is found along the entire coast at a short distance from it.

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PASSAGES BETWEEN TIKAO AND MASBATE.—A chain of islets and rocks, with channels between them, extends from San Rafael, the south point of Tikao, to Point Vigia in Masbate, 8½ miles SW. The most practicable of these channels (named in the Spanish Derrotero, Negrito Head passages,) are one between the islet Matabao, next to Tikao, and Black Rock, and one between Black and Makaragui. The first of these is 1 mile wide and 36 fathoms deep; the second is much wider and 27 fathoms deep.

MATABAO.—From the east coast of this island a bank of sand extends 1½ miles to the NE., with 1¾ fathoms least water over it and 8 fathoms near the edges. The narrow channel between this islet and Tikao has a depth of 8 to 11 fathoms.

Black Rock, or Cabeza de Negrito, is a cluster of rocks which covers at high water; it is steep-to, with 14 fathoms water alongside.

The channels between Makaragui and Deagan and the intermediate islets are of no importance; the channel between Deagan and Point Vigia, in Masbate, is 4 or 5 cables wide and 4½ fathoms deep. The tidal streams run very strong through these channels, reaching a velocity of 3 to 5 knots at springs, with violent eddies.

SOUTH POINT OF LUZON.—From Tagiran Point the coast trends eastward for 6 miles, forming a succession of sandy bays of no great indentation, with small rivers emptying themselves into them. The depth of water in these bays is very great. The little port Bunut, east of Point Langao, is the outlet of a river which flows from a ravine between two high mountains. The depth at the mouth is 15 fathoms, and 4 fathoms farther in; over the bar of the river the water is so shallow that boats can only enter at high tide.

Point Bunut, on the eastern side of the port, is not so high as the adjacent land, but is distinguished by a table top with a cogonal upon it; the other points are covered with trees to the water's edge. From Point Bunut to Point Babatgun the coast is rocky.

Babatgun Anchorage is a semicircular bay included between Point Babatgun to the west and Point Kulasi to the east; on the western side of the bay there is a small sheltered creek with very steep shores, a depth of 4½ fathoms being found at less than 12 yards from the shore. The west point of the bay is rocky, with a reef projecting to some distance from it. Care

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must be taken to avoid this reef, as the flood tide from the Tiklin Channel sets directly on to it. The depth of water between the two entrance points varies from 18 to 4 fathoms, while from the center of the bay toward the above-mentioned creek the soundings are 17 fathoms to 14 not far from the shore.

Kalantas Bank, bearing S. ½ W. 2 miles from Point Kulasi, is formed of large black rocks and coral. The northern head is a flat rock 5 feet above water, with 8 fathoms water near it; the depth increases at a short distance to the northward. The shoal extends SE. from the flat rock, and at a distance of 1 mile the depth is 8 fathoms; from here it augments rapidly to the southward. The tidal streams cause heavy breakers on the bank, giving it the appearance of a white sandy islet.

Tiklin Strait is the channel between the coast of Luzon and the islands Kalintan, Juak, and Tiklin. Although the channel is sufficiently deep, it is not safe for a large vessel to pass through on account of the tidal streams and eddies in it. The western shore of the strait, between points Kulasi and Pandan, is composed of broken coral covered with mangroves, and fronted by a reef ½ mile wide, with 3½ fathoms depth at the edge of it. Shelter may be found, if required, in Kulasi Bay, which lies between Kulasi Point and the island to the northward of it.

Magnok Bay is a small bay open to the eastward, fringed by a narrow reef, with 3 to 4 fathoms water near the edge; the plan shows a depth of 8 fathoms in the middle of the bay. On entering, care must be taken to avoid a rocky shoal covered by 1½ feet at low water, which extends to ½ mile NNE. of the southern point of the bay. During easterly winds the bay is not safe, as a heavy reef breaks within it. The town Magnok on the north side of the bay is poor, and offers few resources.

Islands in San Bernardino Strait—Tiklin Islands.—Kalintan, the southernmost of the group, lies ½ mile SE. of Point Kulasi, in Luzon, and is 1 mile in length, NE. and SW.; Juak, NE. of Kalintan and only separated from it by a narnow channel, is 2½ miles long, north and south; both islands are rugged and covered by ebony trees. There is a small detached rock about 1½ cables distant from the southeast shore of Kalintan. Tiklin, which gives the name to the group, lies ⅔ of a mile SE. of Point Pandan in Luzon, but the available

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channel between them is reduced by reefs on either side to a width of 2 cables. The island itself is ½ mile in length, north and south, but a shoal projects from the south point halfway toward the island Juak, which ends in a rock awash, with 2½ fathoms water near it, leaving between it and Juak a narrow channel fit only for small coasters. Good anchorage may be had at a distance of 2 miles SW. of Tiklin.

Naranjos Islands are a group of six, lying close together, about 7 miles to the southward of the south point of Luzon; they are named respectively San Andres, Rasa, Medio, Darsena, Aguada, and Escarpada; a seventh island, named Destacado ("detached") lies 3½ miles SE. of Aguada. These islands are mostly of moderate height and rocky; their shores are rugged, with occasional sand beaches; the channels between them are clear and practicable for vessels of all sizes; but it is not safe for a sailing vessel to use them on account of the variability and strength of the currents and the shifts of wind experienced along them; besides which, each island is surrounded by a narrow reef projecitng farther from the salient point of the islands. The soundings between the islands vary between 9 and 27 fathoms, so that a vessel could anchor in case of need, but the bottom is rocky.

The channel between Naranjos group and Kaspul Island has not been surveyed. There are no dangers visible in it.

Kapul Island, lying 3 miles SE. of Kalintan Island, is about 7 miles long, NW. and SE., and 2½ miles wide, moderately high, the highest land being on the eastern side near the town Abak. On this part there are sand beaches, but the remainder of the coast is rugged and steep, and it is not prudent to anchor near the shore.

Anchorage.—At about the southern extremity of the island there is a little bay called Juban Bay, with depths of 17 to 7 fathoms, which is probably the only place offering safe anchorage. On the west point of entrance there is a remarkable pyramidal rock which is useful as a guide.

Diamante Rock, lying 2 miles SE. of the south point of Kapul, is small and very steep-sided. It is covered by 2½ fathoms least water, with 17 fathoms at its edge.

Clearing mark.—A vessel compelled to pass between Kapul and Dalumpiri islands may clear Diamante Rock to the westward by keeping the southwest tangent of Kapul in line with the highest part of the Sierra of Gata on Bulan, bearing N.

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38° W., and, by taking care not to open the channel between the islands Aguada and Escarpada, she will clear Diamante Rock to the northward.

Dalumpiri or Puercos Island is low, wooded, and bordered by sand beaches, with rocks close to them. A rocky shoal projects from the southern point more than a mile to the SE., covered by 4½ to 9 fathoms water, with 17 fathoms at a short distance. There is no danger in the way of anchoring off the island, but the water is deep and the bottom rocky. The channel between Dalumpiri and Kapul is 2 to 3 miles wide and clear of danger. Game is abundant, especially wild hogs (puercos). In the middle of the island there is a large lake swarming with alligators.

SOUTHEAST COAST.

Bulusan town, 10 miles north of Point Pandan, is situated on the shore on the right bank of a river which takes its rise on the eastern slopes of Bulusan Volcano. The shore is fringed by a reef to the distance of ½ mile in places, with 2½ to 7 fathoms on the edge.

Bulusan Volcano, 5 miles distant from the coast, is a remarkable active volcano, visible at a distance of 60 miles and forming an excellent mark for making the strait. From the eastward it shows a single peak, but seen from the SSW. it shows two peaks.

San Bernardino Islet, from which the strait takes its name, lies 7 miles from the coast of Bulusan. It is 150 feet high and covered with trees, many of which belong to the ebony tribe. There is a smaller islet close to it to the NNE., and rocks and foul ground extend ½ mile SE. from the island. On either side there is a channel 5 miles wide, with soundings of 30 to 60 fathoms. The chart shows a rock, position doubtful, about 1 mile NW. of the island.

Gubat Bay, 12 miles north of Bulusan, is bordered by reefs, and great reefs project some 2 miles out from the north and south points of the bay. The coast between Bulusan and Gubat is fringed with a wide reef, shown on the chart to extend 2 miles out from the shore in one place. The town of Gubat is on the NW. side of the bay near a tongue of land which divides the bay into two. Steamers from Manila call here about twice a week, but we have no information about the anchorage.

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Montugan Reef is the great reef that fringes the shore from Bulusan to Point Montugan. Its most salient part projects 3 miles to the eastward about 5 miles north of Gubat. The channels in the reef are used by coasters working their way to the Gulf of Albai.

Point Montugan, the southern point of the Gulf of Albai and 9½ miles from Gubat, is very low and sunken and surrounded by shoals. A reef projects 1½ miles out from it to the NE., with 5 to 11 fathoms at its edge.

NORTH COAST.

Cape Bojeador, which forms the northwestern extreme of Luzon, is a low point with a reef of breakers projecting from it. Thence the coast trends in a northeast direction 6 miles to Point Fegra, on the east side of which anchorage may be obtained during southerly winds. The deep bay between this point and Dialao Point, 9 miles to the NE., has much foul ground on its eastern shore. There is anchorage at the head of this bay, near the small port of Bangui, which is said to have been long shut up by an earthquake.

Mairaira Point, distant about 20 miles NE. of Cape Bojeador, has a reef projecting about a mile out. Point Kabikungan, bearing about E. by S. 13 miles from Mairaira Point, is a bluff steep point of white cliffs, having a mass of high mountains, called Patapa Mountains, contiguous to it. To the eastward of Point Kabikungan there is a round hill of middling height, named Point Pata. The whole of the coast from Cape Bojeador to this place is steep, without any soundings until near the shore; the land is of moderate height, and in some parts rather low close to the sea, with several rivers; but the country inland is high and mountainous.

A light-house will shortly be erected on Cape Bojeador.

From Pata Point the coast trends southeastward for 43 miles and then northeastward for 27 miles to Cape Engaño, the northeast extreme of Luzon, forming an immense bay. Fronting the sea is a considerable space intersected by rivers. On the western side is the Abulug; a chain of mountains parallel to the coast and about 6 miles inland. There is a continous beach along this coast with regular soundings, generally 5 to 10 fathoms at a mile or two off on the western part, and the same depths at 3 to 6 miles offshore in the bight of the bay, deepening again near the eastern shore.

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At 14 and 15½ miles SE. by E. from Pata Point are the entrances of the San Juan Pamplona and the Abulug, two small rivers, with a low island between them. A sand bank, the only known danger on the coast, and on which the sea breaks in bad weather, lies about 2 miles N. by E. of the bar of the Abulug, and fronting the point to the westward of the river. It extends ESE. and WSW. 2 miles, and about a mile outside it there are 35 and 40 fathoms, fine black sand.

The entrance of the Kagayai, Rio Grande de Kagayan, 14 miles southeastward of the Abulug, has good anchorage in 10 or 11 fathoms about 1½ miles NNE. from its mouth. The point on the east side is known by the church and convent of the town of Aparri built upon it; abreast of which, or north from the church, is the best anchorage. The river is about ⅓ of a mile at the entrance, with 2 and 2½ fathoms on the bar, deepening to 5 and 6 fathoms, mud, within the bar. The coast to the eastward of the river is flat, with soundings of 20 fathoms, black sand, about 6 miles off shore. Steamers from Manila call fortnightly at Aparri.

Palaui Island, 5 miles in extent and moderately elevated, lies contiguous to the northwestern point of the large promontory which forms the northeastern extremity of Luzon; and the port of San Vincente is formed between Palaui and the coast. The western shore of the island appears bold, but a reef projects from its eastern side to 1½ miles out, the edge of it being about ½ mile from, and around the small islet Escuacha.

Cape Engaño (ch. 8, p. 84), E. ¼ S., 54 miles from Pata Point, is the north point of Palaui Island. The two Hermanos islets lie off this cape, and there are some rocks off the northeast point; a mile to the east of the cape, and at a distance of ½ mile off, lies the islet Gran Laja, a square, steep mass of lava, about ¼ mile in extent, which may be seen at a distance of about 27 miles.

Port San Vincente (ch. 8, p. 84), 30 miles E. by N. ¾ N. of Aparri, is formed by a small island of the same name lying between the northeast end of Luzon, and the adjacent island of Palaui. There is room in this port for three or four ships, sheltered from all winds; but the entrance is narrow and intricate, being formed between shoals on either side which project from the southeast part of Palaui and from San Vincente Island; a vessel is therefore obliged to warp in.

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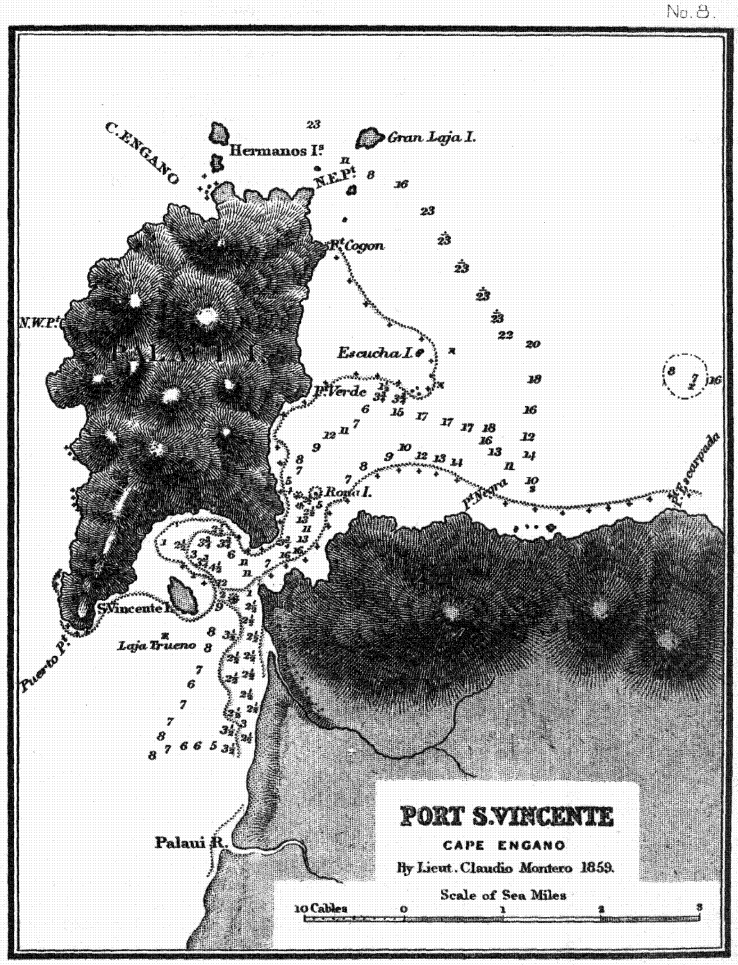
No. 8.


C. ENGANO
Hermanos Is.
Gran Laja I.
N.E. Pt.
Pt. Cogon
N.W. Pt.
Escucha I.
Pt. Verde
Roca I.
Pt. Negra
Pt. Encarnada
S. Vincente I.
Laja Trueno
Puerto Pt.
Palaui R.
PORT S. VINCENTE
CAPE ENGANO
By Lieut. Claudio Montero 1859.
Scale of Sea Miles
10 Cables
0
1
2
3

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Trueno Shoal, which lies ¾ of a mile south of San Vincente Island, does not uncover; the Spanish Derrotero does not state the depth of water on it. The southeast point of Palaui Island kept open to the eastward of the south point of San Vincente Island will clear Trueno to the SE. The currents in this locality are rather strong.

There is good anchorage in 5 fathoms opposite the mouth of the port on the SW., sheltered from all winds but those between W. and SW. There is also anchorage along the coast between Aparri Road and this place, in 15 or 20 fathoms water within 2 miles of the shore; the soundings are pretty regular, excepting at a depression in the bank about 10 miles to the SW. of Vincente, where the depths are 70 to 80 fathoms water about 2½ miles off the shore, having close to the edge of it 30 fathoms, black sand.

There is no description of the eastern entrance to this port, but the survey shows a channel of 5 fathoms between the reefs off the Luzon shore and Roña Islet, in the center of the narrows. The approach is from the eastward, and it is a mile wide between the reefs round Escucha Islet and those bordering the main.

Bank.—One mile to the northward of Escarpada Point, and in a direct line between that point and the northwest point of Gran Laja Islet, there is a rocky bank of small extent, covered by 7 to 15 fathoms.

Reported shoal.—According to the statement of M. Denier, master of the French bark *Douquay Trouin*, a shoal was passed on the 28th of May, 1875, NE. of Luzon Island. When sighted it was awash. It extended in a SW. and NE. direction, thence running NW. for about 100 yards. The vessel passed within a distance of 2 miles, going 6 knots an hour. M. Denier places the shoal in latitude 19° 5′ N. and longitude 124° 43′ E.

Clare of Anson Reef.—Information is wanting about this danger, which is shown on the charts as lying 87 miles S. 73° E. of Cape Engaño; in latitude 17° 49′ N., longitude 124° 40′ E.

Directions.—The channel between Cape Engaño and Kamiguin Island to the NNW. is 20 miles wide, and clear of danger. As the currents set strongly to the northward in the southwest monsoon, it will be prudent for vessels proceeding to the eastward from this coast with light winds to keep on the south side of the channel to prevent their being drifted to the northward near the Guinapak and Didikas rocks, which lie to the northeastward of Kamiguin.

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NORTHEAST COAST.

From San Vincente (ch. 8, p. 84) the coast runs east for 5 miles, bordered by a narrow reef with detached rocks, to Escarpada Point, the northeast point of Luzon, which has been usually distinguished, both in charts and sailing directions, as Cape Engaño. Here the coast turns abruptly to the southeastward for 12 miles to Iligan Point.

From Point Iligan the coast again turns abruptly to the SSW., and then curves gradually round to the eastward to the headland of Moises, which bears S. by E., distant 64 miles from Point Iligan, and is formed by the eastern slopes of Mount Moises. The coast in this wide bight is high and clean, but offers no shelter.

Three mountains, the respective heights of which are 2,086, 3,451, and 3,995 feet, rise to the southward of Cape Engaño, at the distances of 11, 16, and 22 miles, and must be fine landmarks in clear weather. Mount Moises, another one of the range of mountains which traverse the northeast part of Luzon parallel to the coast, is 4,085 feet high, and is a good mark for the ports in its vicinity.

Divilakan Bay, north of Mount Moises, is open to the northward; the shores are fringed with reefs, and there is a depth from 7 to 9 fathoms in the bay. The little port Dimalansan (ch. 9, p. 86), SE. of Divilakan Bay, penetrates 2 miles to the south, but is only 1 cable wide and only 2½ fathoms deep. Port Bikobian (ch. 10, p. 86), south of Dimalansan, penetrates 2 miles to the north, and is 2½ cables wide and 9 to 11 fathoms deep.

Paranan Bay, ESE. of Mount Moises, is semicircular in form, has great depth of water in it, and is free of dangers; but it is quite exposed to the northeast wind. A long sand beach borders the bottom of the bay, into which several small rivers flow. The Spanish survey ends here.

EAST COAST.

The coast between Paranan Bay and Inaguikan Point, 250 miles farther south, has not been surveyed, and is very differently drawn on the English and Spanish charts. Some of the positions, as, for example, Cape Ildefonso, 80 miles from Paranan Bay, is given on the Spanish chart 10 miles SE. by E. of the position given for it on the English chart.

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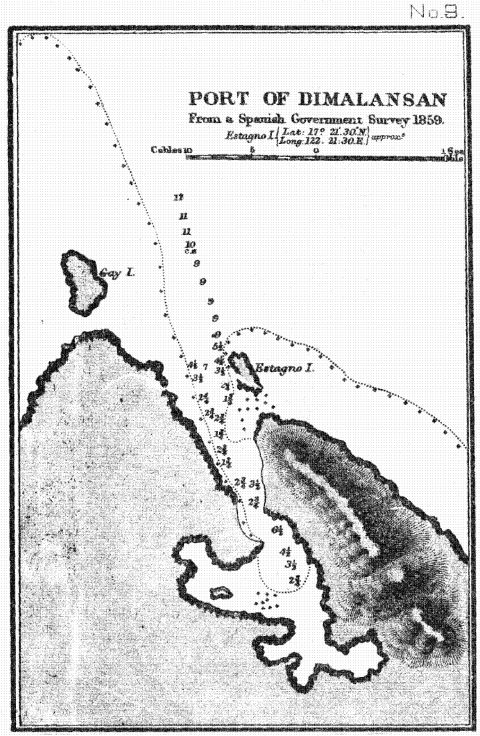
No. 8.



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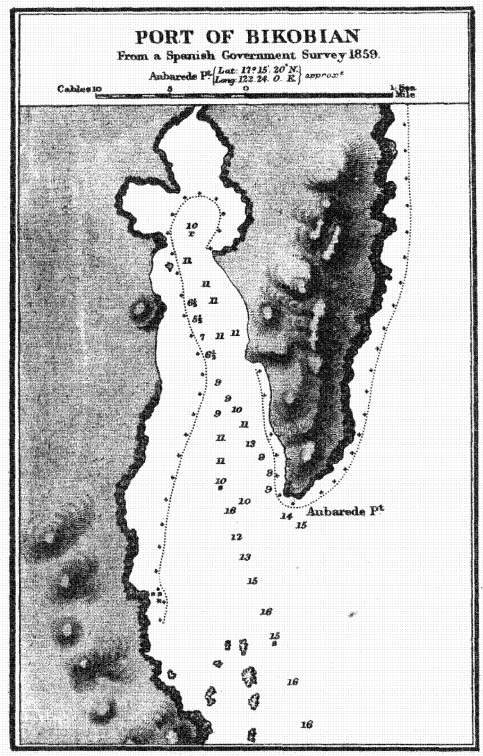
No. 10.


PORT OF BIKOBIAN
From a Spanish Government Survey 1859.
Aubarede Pt. Lat. 17° 15' 20" N. Long. 122. 24. O. E. approx.
Cables 10 5 0 1 Sea Mile
Aubarede Pt

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The general trend of the coast is SSW., and it is stated in the Derrotero to be clean and very steep-to, and with the exception of Prueba Shoal, to present no off-lying dangers. The bays Tumango (Dilasak of the Spanish chart), Kasiguran, Baler, and Dibut (Dingalan on the Spanish chart) are little known; they offer bad anchorages, exposed to all the winds and sea of the Pacific Ocean.

Prueba Shoal, 3 miles from the main coast, nearly west of the northern point of Polillo Island, is the only off-lying danger between Cape Engaño (ch. 8, p. 84) and Point Inaguikan.

Dingala Bay is clean, with a depth of 22 fathoms in the middle of it, and 2½ fathoms at 2 cables from the shore. There are rocks close-to off the south point. In the northern part of the bay there is a creek sheltered from the northerly winds, with anchorage in 7 fathoms at 6 cables from the shore.

A round point projects from the bottom of the bay, with ten islets off it on a reef which extends 2½ miles north and south; this reef has several rocks awash upon it, and a depth of 4 fathoms at the edge.

The river Dumangas, which enters the southern part of the bay, has 5 feet of water on its bar; and Umirei River, 1 mile farther south, has 6 feet of water on its bar.

Lamon Bay, comprised between two points, Inaguikan to the NW. and the land of Mambulao to the SE., is protected from northerly winds by the islands Polillo and Jomalig.

The little island Balesin lies in the middle of the bay, and farther in, the islands Cabalete and Alabat; these two last-named islands form with the coast a well-sheltered port, with good holding ground. The passage on the eastern side of Alabat is free of danger, but that on the western side is shallow and foul. It must be remembered that the coast here is not well known, and the bays along it have not been sounded out.

Polillo Island rises in the center to a mountain of moderate height with wooded slopes. The north coast is clean and steep; the east coast is bordered with islands and dangerous reefs, but the west coast is clean, except before the port of Polillo, where a great reef runs NW. parallel to the coast, leaving a narrow channel some 14 fathoms deep leading to the port. Soundings show 9 to 18 fathoms water at a distance of ½ mile from this shore.

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Port Lampon, in the northwestern part of Lamon Bay, is a small but well-sheltered port, of a depth of 5 to 12 fathoms over a bottom of sand and mud. The shores are covered by dense vegetation, and commanded by the remarkable mountain by name Binangonan; several rivers flow into the port, and good water may be obtained. This port is celebrated in the history of the Philippines by having been during a part of the Sixteenth Century the depot of the Spanish galleons and the treasures of Manila, as being situated in a freer position for communication with New Spain than might have been any port in the then little known and difficult strait of San Bernardino.

Mauban Anchorage lies about 20 miles south of Port Lampon. Information is lacking about this anchorage, but it must be a place of trade, as steamers call there. An outline sketch of the port was made by the officers of Malaspina's Expedition in 1792.

ALABAT HARBOR.—There is no information about this harbor beyond what is stated above from the Spanish Derrotero, viz, that the islands Alabat and Cabalete form with the main coast a sheltered harbor of good holding ground; and there is an old record of the tides.

Tides.—It is high water, full and change, at Alabat Harbor at 10h.; springs rise 9 feet.

Port Mambulao, between Pinandunguan Point and the Dajikan Islands, is safe, sheltered from all winds and easy of access. The depth of water diminishes gradually from 11 fathoms at the entrance of the bay to 2 fathoms before the mouth of the river at the head of the port. The number of fishing inclosures within the harbor considerably obstructs the navigation. The town of Mambulao, at the mouth of the river, is of slight importance. This town and the neighboring one of Parakale are famous for red-lead ore found in the vicinity.

TANAOS ISLETS are five low flat islets lying 3 miles NNW. of Pinandunguan Point. Another low flat island named Tabusao, lies west of the same point.

KALAGUAS ISLANDS are a group of eight islands and several small islets, the largest and most central of which is Tinagu; they are mostly bordered by reefs, and are all low, except Makulabo, which can be seen in clear weather at a distance of 24 miles. Anchorage may be found eastward of Makulabo,

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from the southwest part of Tinagu to 3 miles N. by E. of Parakale on the main coast. Water can be obtained on the east side of Makulabo.

Matandumaten Islet is shown on the chart at 10 miles SE. of Kabalisai, the easternmost of the Kalagua Islands, and midway between these two another islet is shown, with a rock off its southern side. Information is wanting about these islets.

Danger.—A great bank is shown on the charts as lying 23 miles NE. by E. of the Kalaguas, stretching 20 miles WNW. and ESE., with 3 to 5 fathoms of water over it. No soundings are given in the neighborhood of this bank, nor between it and the coast; but it is believed that the channel between the bank and Kalaguas is deep.

Coast.—Parakale is a town in a little bay 7 miles SE. of Pinandunguan Point. Parakale Point, the westernmost point of the bay, is low, covered by mangroves, and bordered by a reef. From Bakai Point, the eastern point of the bay, the coast trends south 62° E. as far as Indang Point (Jimdang), and is low and bordered by a beach, off which there is good anchorage.

Indang Island (Kinamanokan), off Indang Point, is low, flat, and bordered by sand beaches; it is separated from the coast by a channel 5 to 10 feet deep.

Daet River, which enters the sea 6 miles SSE. of Indang (Kinamanokan) Island, is 11 feet deep at the mouth and 16 feet deep farther up. When entering the river the western shore, upon which stands a fort, must be kept aboard, as there is a reef off the eastern point, which is low and covered by mangroves. Steamers from Manila call here.

Kanimo and Kanton islands, situated at a short distance SE. of Daet River, are of moderate height. Kanimo, which is the larger of the two, is about 2 miles long, north and south; its shores are mostly surrounded by rocks, but on the northeast side there is anchorage on sandy bottom. Five small islands, named Rasas, lie to the southward and southwestward of Kanton Island. The water in the neighborhood of these islands is shallow.

Kolasi Point, formed by the slope of Kolasi Hill, is high; there is a little bay, 3 fathoms deep, between the point and a peaked hill SW. of it. The town of Kolasi, which stands on the northern slope of the hill, must be a place of some trade, as steamers call there.

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San Miguel Bay.—To the eastward of Kolasi Point the coast forms a clean circular bay, some 20 miles in diameter, surrounded by high mountains, and capable of harboring, in safety, vessels of great draft. When entering from the eastward care must be taken to avoid the reefs off Siruma Island and Pinitan Point. The depth of water in the middle of the bay is 7 to 8 fathoms, lessening gradually toward the sides. The western shore, between Kolasi Point and Kabusao River, at the bottom of the bay, is very low, and edged by a sandy beach, with shallow water off it.

Kabusao River, which discharges itself through a low, flat shore, is 1 cable wide and 3½ fathoms deep at the mouth; farther up it carries a depth of 2½ fathoms throughout a length of 24 miles, as far as the town of Nueva Carceres. A bank of sand, covered by 3 feet water, projects 2 miles to the NE. from the mouth. There are two other shoals to the westward of the outer end of the bank. Kabusao is only a fishing village.

Kabalanga River, 6 miles to the eastward of Kabusao, has a good depth of water. The town of the same name is built a little way up the stream.

Siruma Point and Island.—From Kabalanga River the coast rises and continues of moderate height as far as Siruma Point. The depth of water off this coast is irregular, and some shoals and small islands lie near it. Siruma Point is connected with the small island close to it by a reef; another reef extends 1½ miles WNW. of the island, and dries in places.

The coast.—Siruma Bay, to the eastward of the point, has depths of 7 to 9 fathoms, sand. From the northern point of the bay a reef projects 2 miles to the NW.; the breakers on this reef can be seen to some distance. Between Siruma Bay and Port Sisiran, the coast is bordered by islands and rocks. The several bays that it forms are foul, and accessible to fishing boats only. Botauanan, the northernmost island on this part of the coast, is high and surrounded by rocks.

Kinalasag Island, which forms the northern side of Port Sisiran, is about 4 miles in length, moderately high, and clean on the side toward the port. Bagakai Island and several smaller islets lie off the northern point, and from the northern part of Bagakai a reef with rocks awash extends ½ mile out. A rock (Laja) on which the sea breaks lies 1½ miles off the northeast shore of Kinalasag, off the entrance to Port

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Sisiran. Of the two passages on either side of this rock, that to the westward is the best; soundings show depths of 14 to 23 fathoms at less than a mile from Kinalasag.

Sisiran Port is clean and capacious, and has good anchorage sheltered by high ground. The entrance, open to the north, is 1½ miles wide and has a depth of 10 to 12 fathoms near the point of Kinalasag, and 7 fathoms near the edge of the reef which surrounds the eastern point to a distance of 2 cables. Within the port the depth of water decreases gradually from 10 fathoms at the mouth to 2¾ farther in; bottom sand and mud near the shore. Water can be obtained on the eastern shore, but no provisions are procurable.

Tagun Bay, east of Port Sisiran, has not been explored.

Lahui Island is 4 miles long, NNE. and SSW. Its northwestern extremity terminates in a remarkable sharp peak like a sugar loaf, higher than several islets which lie near it. The northeastern point is bordered by a reef to a distance of 3 cables. At a distance of 3 miles NW. of the Sugar Loaf there is a group of four islets, the largest of which is 3 cables in length, with a reef projecting 1 mile to the northward from it, and surrounding two still smaller islets. The southern islet of the group lies 7 cables SE. of the largest islet, and is clean and steep-to. The channel between these islets and Lahui Island is safe, and has a depth of 12 to 27 fathoms.

Coast mark.—The Sugar Loaf above mentioned makes a good mark for the entrance of Port Sisiran when coming from the eastward.

Kanamuan Port, situated at the foot of the highest mountain of this part of the coast, is very small, and has a depth of only 2½ to 3½ fathoms. The town Kanamuan is 4 miles inland, on the left bank of the river. Kanamuan Point, 4 miles east of this port, is high and steep, as is also the coast, which runs SE. by S. for 5 miles from it, as far as Point Bungus.

Katanaguan Islands, 2 miles east of Kanamuan Point, are small, low, and surrounded by reefs. Tacbun Channel, between the above-named islands and point, is clear, with 17 to 8 fathoms of water. The two islets Palombon, east of Point Bungus, are separated from that point by a channel 1½ miles wide and 15 fathoms deep.

KATANDUANES ISLAND, separated from Luzon by Maqueda Channel, is about 38 miles long, north and south, and

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22 miles broad, and traversed throughout its length by a chain of mountains. It is abundantly supplied with small rivers, from the sands of which the natives obtain gold dust. The soil is fertile and produces rice, maize, sesame, indigo, cotton, and abaca (manila hemp), and there are good pastures for rearing horses and oxen.

The west coast is in general safe and steep; the east coast, bordered by little islets, presents some bays with bad anchorages; and off the north coast there are various islets and shoals detached from the shore to a distance of 10 miles.

Iot Point, the northern extremity of the island, is of moderate height and steep-to. Matulin Island, 3 miles ENE. of Iot Point, is the center of a circular reef about 2 miles in diameter and awash throughout its entire extent.

Horadaba Islets are three rocks, the northernmost of which bears N. 31° W. distant 3 miles from Iot Point. Abriop Bank, 1 mile NW. of Horadaba Islets, has not been surveyed. It is shown on the chart as extending 3 miles from east to west and 1 mile from north to south.

The Palumbanes Islands are a little group of three islets 4 miles west of Karao Bay. A shoal upon which breakers were seen is reported to be situated about 4 miles northward of Palumbanes Islands. A rocky bank, 1 cable in extent, lies in the channel between the Palumbanes Islands and Karao Bay.

Karao Bay, on the northwest part of Katanduanes Island, offers fair anchorage over a rocky bottom; there is no other anchorage on the west coast of the island.

Sialat Point, on the southwest part of Katanduanes, is high. Agajo Point, 5 miles south of Sialat, is low and covered by mangroves; from this point the coast trends SE. by E. for 7 miles to Tuguntun Point, and is high, with little bays in it, which do not afford anchorage. The town of Kalolbong lies midway between the two points; the chart shows two shoals off Kalolbong.

Kabugao Bay, on the south side of the island, is 11 miles wide between the points Tuguntun and Nagumbuayan, and 18 fathoms deep, shoaling gradually to 4 fathoms near the shore. Tuguntun Point, the southern point of the island, is low and bordered by rocks, and 2 miles NE. of the point there are two rocky shoals. Farther north, on the left bank of a little river, stands the town of Birak, the most important on the island.

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Kabugao River, on the eastern side of the bay, is fronted by two islets, and has a bar which nearly dries at low water. The towns of Cabugao and Bato stand on the banks of the river. The western shore of Kabugao Bay is bordered by banks and rocks.

East coast of Katanduanes.—Port Baras has a depth of 3 to 7 fathoms, but is obstructed by reefs which make the entrance difficult. Port Bagamanok, on the northeast coast, offers two anchorages. The southern anchorage is between the island Panai and Anajao Point; the entrance which runs east and west leads into a little semicircular bay, between two islets, having a depth of 4½ to 7 fathoms. The northern anchorage is situated at the southern extremity of the narrow channel between the reef off Minigil Point and off Panai Island, and it has a depth of 17 fathoms, lessening to 7 fathoms, sand, opposite the town of Bagamanok.

Winds on the east coast of Luzon.—From Cape Engaño to the Bay of San Miguel, northeast winds prevail from October to March, the monsoon here beginning with north winds which are of short duration and soon pass into the northeast; in January and February the east winds begin, and terminate the monsoon. The heaviest rains fall from October to January, and in October typhoons sometimes occur. In March and April, and sometimes in the beginning of May, variable winds blow, bringing in the southwest monsoon; but the dry season, of which April and May are the driest months, is uninterrupted by rain.

Thunderstorms occur from June to November, most frequently in August. During the southwest monsoon the sea is very calm, but in the middle of the northeast monsoon all navigation ceases on the east coast.

Tides.—The flood stream sets to the northward, both on the east and on the west side of Katanduanes Island, and to the westward along the part of the coast between Katanduanes and Polillo Island. There is no information as to the hours of high water.

Lagonoi Gulf has not been sounded, nor are its coasts well known; it appears, however, to be safe, and no dangers have been reported on the route between Maqueda Channel and Tobako Bay in the southern part of the gulf. The part of the coast that runs NW. of Tobako for 8 miles, as far as Tibi town, is bordered by a sand beach with good depth of water off it.

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Mount Isaro, which rises to a height of 6,462 feet between San Miguel Bay and Lagonoi Gulf, is an extinct volcano of 36 miles in circumference. Its eastern slopes reach nearly to the waters of Lagonoi Gulf, while its western slopes are separated from San Miguel Bay by a wide strip of alluvial soil. Mount Iriga, between Mount Isaro and Albai Volcano, is 3,976 feet high.

Tobako Bay, in the southern part of Lagonoi Gulf, is fronted by the islands San Miguel and Kakrarai, and is by them formed into an excellent and capacious harbor 6 miles long and 3½ miles wide, with a depth near the shore of 9 to 5½ fathoms. These two islands are connected by a reef, and Kakrarai is only separated from Sula Point, the southern point of the bay, by a narrow, winding, and impracticable channel. The entrance to the harbor, between points Natunaguan on the main coast of Luzon, and Guinamban on San Miguel Island, is 7½ cables wide. The first of these two points is clean; but a reef projects to the NW. from Point Guinamban, to a distance of 1 mile, and continues round the north coast of San Miguel.

The town of Tobako, in the northwest part of the bay, carries a brisk trade with Manila, steamers calling there three or four times a month. From Tobako the coast is steep, with 4½ fathoms close to it, as far as Bagakai, situated 4½ miles SSE. of Tobako. Anchorage may be had anywhere between these two places, but the best is off Tobako, in front of the church.

From Bagakai a reef stretches across the southern part of the harbor to Kakrarai Island, inclosing the islet Bugias, which is round and flat-topped, and closes the mouth of the Sula Channel. Pilis Bay is a lagoon some 7 fathoms deep, into which vessels of very light draft can enter at high water.

Tides.—The flood stream sets to the north and the ebb to the south.

The islands of San Miguel, Kakrarai, and Batan are separated from each other by channels full of rocks and shoals that dry at low water, rendering them impracticable; the north coast of San Miguel is bordered by reefs, the extent of which has not been determined; it is, therefore, prudent to give the coast a berth of 2 miles at least.

Rapurapu Island is high; it is separated from Batan by a channel 2 miles wide, but too much obstructed by rocks to be

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navigable; a reef stretches about a mile out from the middle of the south shore and dries at low water, and a rock lies 1 mile WSW. of the western point of the island.

ALBAI GULF, south of the above-named islands and 22 miles long, east and west, is 4 miles wide between Rapurapu Island and Montugan Point in Bulusan, and of the same width between Kakrarai Island and Paron Point. The shores are in general steep, but the opening in the southern part, called Poliki Bay, is shallow and foul. The Spanish Derrotero states that there are only two shoals in the inner part of the gulf, 2 miles from the shore at the head, but the Spanish chart of 1873 shows "varios bajos" (several shoals) in the middle of the inner part.

Sula Port, formed by the southern part of the narrow channel that separates Kakrarai Island from the mainland, is well sheltered and has good holding ground. It is 4 cables wide and 11 fathoms deep at the mouth, continuing the same width and depth for ½ mile to the northward. The channel then curves to the westward and narrows to ½ cable, so that only the lightest of coasters can enter Tobako Bay by it. Both of the entrance points are bordered by reefs 1 cable wide.

Livok, at the head of Albai Gulf, is a town on the left bank of a little river. A reef lines the shore near the town, and is shown on the chart to extend to ¾ mile from the shore.

Shoals.—SE. of Livok, at a distance of 2 miles, there are two rocky shoals, 1 cable in extent and covered by 3 feet of water. From the northern shoal Sula Point bears N. 56° E., and Livok town N. 30° W. From the southern, Sula Point bears N. 56° E., and Livok town N. 22° W. This locality should be approached with caution.

Albai River, about 6 miles south of Livok, is of no great importance, and has only 1 foot of water on the bar at low water. The new town of Albai, capital of the province, stands on level ground 1 mile WSW. of the old town of Albai, which was the capital before the eruption of the volcano in 1814. The new town is sheltered from the volcano by an isolated hill named Linguin, which, as also a low hill named Kapuntakan on the south point of the river, are good marks for making the anchorage. Between Livok and the river Albai the shore is bordered by a sand beach, having depths of 9 to 11 fathoms near it. The town of Albai exports hemp to the value of $3,000 annually.

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Albai Volcano, situated on a great plain about 5 miles from the shore near Livok, is one of the most remarkable volcanoes of the Archipelago; it forms a perfect cone 8,274 feet high, always crowned by a great plume of vapor, and is a good mark for navigating the coast.

Poliki Bay is obstructed by reefs, at the edge of which there are soundings of 5½ fathoms; on the western side there are several little channels which do not afford good anchorage.

Paron Point, the northeast point of the gulf, is high and steep; there is a thermal spring near it, the vapor from which can be seen at a great distance.

Jesus Point, 2 miles SE. of Paron Point, has on its western side a little beach, near which there is anchorage. From Point Gajo, 2 miles SE. of Point Jesus, a reef, which extends westward nearly a mile, fringes the shore as far as the head of Sugot Bay.

Sugot Bay is 1½ miles wide, and penetrates 2 miles to the southward; the eastern shore only is accessible and is bordered by a sand beach with a depth of water of 5½ fathoms near it; the western shore is fringed by a reef. The river and town of Sugot are at the head of the bay; vessels drawing 19 feet can approach the mole of the town.

Coal.—A layer of coal, similar in quality to Australian coal, has been discovered at Gatbo, a village SE. of Sugot town.

MONTUGAN POINT.—A line of reef, extending more than a mile out, fringes the shore from Point Pagjuriran to Point Montugan, and continues round the coast into San Bernardino Strait.

PROVINCE OF MANILA.

It is bounded on the north by the Province of Bulacan, on the east by the District of Morong and Laguna de Bay, on the south by the Province of Cavite, and on the west by the bay of the same name. The area is 264 square miles and the population 400,000.

Manila (see plan of Manila on separate map), capital of the Philippine Archipelago and the province of this name, has 110,000 inhabitants and was founded in 1571, on the left bank of the mouth of Rio Pasig at its junction with the Pacific Ocean.

It is a fortified city, encircled by a wall with bastions and bulwarks and a ditch and outer ditch, where it does not front on the sea or river. The waters of the sea or river can be let

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in and thus isolate the city by opening the sluices constructed for this purpose. There are six gates—three to the north, on the road to the river Pasig, called Almácenes, Santo Domingo, and Isabel II.; and three on the land side, called Parián, Real, and Santa Lucia. All are well defended by bastions, particularly on the land side. Besides the gates, there is a bastion to the north-northwest of the gate of Santa Lucia, which is not always open.

The gate Real formerly enfiladed the Plaza Mayor and the palace of the governor, but since the taking of the city by the English in 1762 it has been placed in front of the college of San José, where it is now situated, and public entrance is made through the gate of Parián. The land side is the most exposed and the best fortified, but for convenience the description will begin at the most advanced point formed by the river and sea, which is to be found at the extreme northwest of the city and defended by the royal fort of Santiago. Thence it will follow the bank of the river to the extreme northeast, where the bastion to San Gabriel is situated, from which point, proceeding along the trace in an oblique direction, first to the northeast, then to the east, and finally to the south, the extremity of the part in the battery of San Gregorio and the bastion of San Diego is reached. From here one turns to the southwest along the coast, which leads to the before-mentioned fort of Santiago. This fort is a citadel, defending the entrance to the river and the northwest angle of the city. Originally built of wood, it assumed its present form by order of Governor Gomez, who surrounded the city with good fortifications. The fort has a gate to the plaza and a false one to the river. In front, and on the other side from this, is found the fort of Fernando, which has no great strength.

On the east of the royal fort of Santiago, and at a short distance from it on the same side of the river, is found the bastion Tenerias; next, in the same direction the gate of Almácenes; more to the east, the battery of the military hospital. Not far from this and on the same line, the gate of Santo Domingo with its strong battery; next, the bastion of the customs house (Aduana); next, the gate of Isabel II., and lastly, the bastion of San Gabriel, which terminates the line of fortifications along the river. Joined to this bastion on the exterior side is found the Plaza Nueva. Still following the trace from the bastion of San Gabriel, one arrives at the gate

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of Parián, through which it is necessary to pass in a northerly direction to reach the bridge of Pasig. Leading south from this gate, is a beautifully paved highway of great breadth, and to the southeast is the bastion Diablo. South of this point is the postern of Recoletos and just beyond, the bastion of San Andrés. Thence, to the southwest, is situated the royal gate, and, as has been stated, the extreme southern point is defended by the bastion of San Diego protected by the battery of San Gregorio, which is built on the exterior line in the angle of the plaza.

Many of these works have deteriorated with time, and the expenditure of a little money and labor, especially at the strategic points of Santiago Point, Restinga Point, and Corregidor, would be of great benefit. The streets are straight, well paved, and illuminated. Prominent among its buildings are the governor's palace, the royal court of chancery, and the convent of San Agustin, with its handsome church; the church and convent of the Recollects of San Francisco, whose buildings occupy an immense space; the royal college and pontifical university of St. Thomas, which is spacious, well constructed, and possesses a notable physical laboratory; the municipal atheneum, in charge of the Jesuits, with a physical laboratory, natural history museum, and a magnificent apparatus for astronomical observations; the military hospital, with room for 1,000 beds, and the spacious and well-attended hospital of San Juan de Dios. Among the buildings ruined in the earthquake of 1863, some of which are being reconstructed and others already so, are the large and well-constructed cathedral, the customs building, etc.

Within the fortified city reside, generally speaking, the authorities of the archipelago, who have the same mission and the same hierarchy as those of Cuba.

The real nucleus of the population of Manila is in its suburbs. These comprise the pueblos called Binondo; San José; Santa Cruz, with 15 wards; Quiapo, with 2 wards; San Miguel, with 7 wards; Sampaloc, with 39 wards; and Tondo, with 18 wards. The neighborhoods of these suburbs are delightful and picturesque, with their rivers, lagoons, creeks, islands, quarries, and little hamlets. Good bridges facilitate communication between Manila and its suburbs. The suburb of Binondo is the most mercantile of the archipelago; here are the central administration of revenues and monopolies,

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general tobacco warehouses, and the administration of finances of the province. Its streets are narrow and the houses tastefully and solidly built. On the breakwater of the jetty extending out into the bay is a third-class lighthouse, and the steamers which perform the service of the bay and make periodical trips to the provinces of Cavite, Batangas, Bulucan, and Pampanga, close in along the river.

North of Binondo, separated by a river spanned by several bridges, is the suburb of Tondo, extending to the west of the bay, on flat, sandy ground. The houses are in general constructed of cane and nipa (a species of palm with feathery leaves); the streets are narrow, and there is a handsome church, a small theater, and a good market place. Northeast of Binondo is the suburb of Santa Cruz, with good buildings, a flower market, theater, public jail, leper hospital under the Franciscans, and a cemetery for Chinese or Sangley infieles (infidels).

Northeast of Manila and at the extremity of the suburb of Santa Cruz is the suburb of Quiapo, with good houses, handsome and well-aligned streets, and a pretty market place. There are the tribunal of the natives, an elegant and solid structure; the well-built suspension bridge over the Pasig, measuring 350 feet long by 23 feet wide; the magnificent market of the Quinta, and the spacious and pretty San Sebastian street, with elegant buildings and convenient porticos, at the end being the sanctuary of San Sebastian under the Agustin Recollects.

The suburb of San Miguel is situated to the east of Manila on the opposite bank of the Pasig River, being connected with Quiapo by a good wooden bridge; it has good buildings and a comfortable and well-ventilated barracks. Along the river are a number of villas, the last one being called Malacamang, the residence of the supreme authority of the archipelago. It consists of an elegant palace divided into two parts, surrounded by gardens, with good wharves on the river. On the island of San Andrés, situated in the center of the river Pasig, is the convalescent hospital, spacious and with good hygienic conditions, the San José poorhouse, and the insane asylum. To the east of the island are the San Andrés and San Rafael batteries, the southern part serving as support to the bridge uniting the suburb of San Miguel with San Miguel Viejo.

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To the northeast of Manila, adjoining it and fronting on the river bank, is the place known as arroceros (rice mills), a much frequented spot, where are located the tobacco factories, in one of which over 7,000 female laborers are constantly occupied; also the botanical garden, the barracks of the regiment of peninsular artillery, the Spanish theater, the Kiosko, designed for public dances, and the slaughterhouse.

A mile and three-quarters south of Manila, on the banks of the bay, is the pueblo of Malate. It is crossed by the highway from the capital to Cavite; it has a fine church, an infantry barracks occupied by a regiment of that arm, and a cavalry barracks, quartering the lancer squadron of Luzon; both are good and spacious.

On the shores of the Pasig is the paseo (promenade) of Magallanes, on which is erected an obelisk dedicated to the memory of the illustrious mariner, Magellan. On the paseo del malecón (dike promenade) is another monument recalling the patriotism of the oidor (judge) Anda. There are cock pits and luxurious cafés, the Spanish recreation club, a military library founded by royal order of February 15, 1846, and outside the town a riding school and race course.

The garrison of Manila and its suburbs was composed of 3 regiments of infantry, a battalion of artillery, the squadron of cavalry, and a regiment of veteran gendarmery (guardia civil).

The general postal service of the north comprises the provinces of Bataan, Zambales, Pampanga, Tarlac, Pangasinán, Unión, Ilocos Sur, Ilocos Norte, and the districts of Lepanto, Bontoc, Benguet, Tiagan, Porac, and Corregidor.

The cross-country line comprises the provinces of Bulacán, Nueva Écija, Nueva Vizcaya, Isabela, Cagayan, and the districts of Príncipe and Saltan.

The general service of the south comprises the provinces of Laguna, Batangas, Mindoro, Tayabas, Camarines Norte, Camarines Sur, Albay, and the districts of Moring, Masbate, and Ticao, and Infanta and Burias.

That of Cavite (two expeditions daily).

That of Pampanga, Bataan, and El Corregidor.

That of Bulacán, Pampanga, and Nueva Écija.

That of La Laguna (by steamer).

That of Laguna, Batangas, and Mindoro, river route.

That of the interior of the provinces of Manila.

That of the Batanes Islands.

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That of Balábac, Laucan, Puerto-Princesa, Zamboanga, and Pollok.

In the maritime provinces of the archipelago the arrivals and departures are uncertain, the service being performed by coasting vessels.

MANILA BAY.

The general map of the island of Luzon shows, in general outline, Manila Bay and Cavite, the port and marine arsenal of Manila, off which the engagement of May 1 took place. Manila Bay is about 30 miles in extent each way. The land on both sides of the entrance is high and covered with vegetation, while the shores at the head are low, marshy, and intersected by numerous small rivers, estuaries, and tide lakes. Fortifications were erected commanding the opening of the bay with the additional protection of submarine mines; depth of water, from 16 to 17 fathoms.

Corregidor, or Mariveles, and Pulo Caballo are islands dividing the entrance of Manila Bay into two channels. Corregidor, the principal island, 600 feet high, lies near the north shore, and is 3 miles in length, east to west. There is a lighthouse on its summit. On its north side is a small bay, protected by breakwaters, affording anchorage for small vessels, and from Buri Point a reef juts to the southward toward Caballo Island, on a low spur of which is a fixed light. It is the channel between Caballo Island and the mainland which was used by the United States squadron, and which was apparently not defended at all.

Manila is about 25 miles from the entrance of the bay. A telegraph connected Manila with Hongkong, the cable, which was originally landed at Cape Bolinao, having been shifted to the chief town. Manila's total export and import trade is worth about six and one-half millions sterling. The length of quayage in the river Pasig is 4,250 feet, but the river, the average breadth of which is 350 feet, is too narrow to allow vessels to turn. The longest vessel using the river regularly is 231 feet. Larger vessels lie at anchor in the bay. Pasig River, which is navigable for about 10 miles, is the principal channel of communication with the interior; there is a depth of 11 feet on the bar at low water. It passes between the commercial districts and the fortress of Manila. At its mouth is a breakwater, and a battery is placed on the southern mole.

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Cavite (ch. 5, p. 49), which stands on a low point of land, is fortified, and more guns are said to have recently been placed in position. The Spanish troops were in garrison there. The whole number of officers and troops in the islands on November 1, 1897, was about 46,168, having been largely reenforced in 1896-97 to quell the revolution. At Cavite vessels are built and repaired, the port having excellent conveniences. There is a slip with a cradle 270 feet broad, and hydraulic power capable of drawing 2,000 tons. Workshops contain appliances of all kinds. A dock for gunboats and a larger private dock for vessels of 1,500 tons have been constructed. The harbor, or cove, is a good one, with shelter from west and southwest winds, and a depth of water of 3¼ fathoms. From Cavite to Manila by water is 7 miles, but by road 15 miles. Large vessels generally anchor off Cavite Harbor, about a mile from the shore, in 5 fathoms. Here the Spanish flotilla was placed.

CITIES AND TOWNS.

Caloocan.—Population, 9,843; situated 7 miles from Manila. There are highroads to Manila, Novaliches, Mariquina, and Sampaloc.

Dilao.—Population, 4,625; situated 3 miles from Manila.

Ermita.—Population, 4,726; situated 1¼ miles from Manila.

Las Piñas.—Population, 4,000; situated 8 miles from Manila.

Malate.—Population, 2,319; situated 1⅔ miles from Manila.

Malibay.—Population, 2,890; situated 4 miles from Manila.

Mariquina.—Population, 10,313; situated 7 miles from Manila. It communicates with Caloocan by a highroad.

Montalban.—Population, 3,055; situated 16 miles from Manila.

Muntinlupa.—Population, 5,068; situated 21 miles from Manila.

Navotas.—Population, 9,154; situated 6¼ miles from Manila.

Novaliches.—Population, 1,871; situated 10 miles from Manila. It communicates with Caloocan and Manila by highroads.

Pandacan.—Population, 2,446; situated 2 miles from Manila.

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Parañaque.—Population, 9,863; situated at a distance of 6⅛ miles from Manila.

Pasig.—Population, 22,000; situated 7 miles from Manila.

Pateros.—Population, 2,842; situated 3 miles from Manila.

Pineda.—Population, 9,825; situated 3⅛ miles from Manila.

San Felipe Neri.—Population, 5,465.

San Juan del Monte.—Population, 2,011.

San Mateo.—Population, 6,700; situated 17 miles from Manila.

San Pedro Macati.—Population, 3,921; situated about 3 miles from Manila.

Santa Ana.—Population, 2,194; situated about 3 miles from Manila.

Taguig.—Population, 9,662; situated 4 miles from Manila.

Tambobong.—Population, 25,000; situated 3 miles from Manila.

PROVINCE OF ABRA.

Situated in the northern part of the island of Luzon, it is bounded on the north by the provinces of Ilocos Norte and Cagayan, on the east by Isabela and part of the district of Bontoc, on the south by the districts of Bontoc and Lepanto and part of Ilocos Sur, and on the west by Ilocos Sur. Its rugged and volcanic surface is covered with rich vegetation, the oak, pine, and strawberry tree abounding. Among the game are buffalo, deer, wild boars, monkeys, etc., and in the valleys are grown vegetables, maize, tobacco, and palay. The area is 3,280 square miles, and the population 49,702, distributed among 9 pueblos and 40 rancherías.

The capital is **Bangued,** with a population of 13,417. It is situated 236 miles from Manila. It has a telegraph station, and was the residence of the politico-military governor.

CITIES AND TOWNS.

Alfonso XII.—Population not known.

Bacay.—Population, 2,461; situated 11 miles from Bangued.

Dolores.—Population, 2,970; situated 6½ miles from Bangued. There are highroads to Taynud.

La Paz.—Population, 2,869; situated 8 miles from Bangued.

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Pidigan.—Population, 2,142; situated 3 miles from Bangued.

Pilar.—Population, 4,107; situated 3 miles from Bangued.

San José.—Population, 1,285; situated 17 miles from Bangued.

San Gregorio.—Population, 1,429; situated 4 miles from Bangued. It has a post office.

San Quintín.—Population, 725; situated 8 miles from Bangued. It is on the highroad from Bangued to Vigan.

Tayum.—Population, 3,436; situated 2 miles from Bangued.

Villavieja.—Population, 859; situated 20 miles from Bangued.

PROVINCE OF ALBAY.

Situated in the extreme southeast of Luzon, it is bounded on the north and east by the Pacific, on the south by the Strait of San Bernardino and the Sea of Visayas, and on the west by Camarines Sur. It is a broken volcanic country; there are several extinct volcanoes and one in activity called Mayon or Albay, being high and of dangerous ascent. There are impenetrable forests of very rich timber, and much large and small game. Numerous rivers water delightful valleys, in which all products of the country are grown. There are good highways. The natives are very industrious, and on the coast there are many dockyards where good vessels are constructed. The area is 2,262 square miles and the population 296,850.

The capital is **Albay,** with a population of 14,000, the township having 34,000. It is situated on the bay of the same name and at the foot of the Mayon volcano, and was the residence of the alcalde mayor, the promotor fiscal, and a number of public functionaries.

CITIES AND TOWNS.

Bacacay.—Population, 10,547; situated 11 miles from Albay, on the bay of the same name.

Bacon.—Population, 13,013; situated 6 miles from Albay.

Bagamanog.—Population, 1,209.

Barcelona.—Population, 1,567; situated 62 miles from Albay.

Bato.—Population not known; situated 29 miles from Albay.

Bulan.—Population, 11,000; situated 21 miles from Albay.

Bulusan.—Population, 5,230; situated 82 miles from Albay.

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Cagsaua.—Population, 20,449; situated 2 miles from Albay.

Calolbon.—Population, 4,382.

Camalig.—Population, 14,868; situated 7 miles from Albay.

Caramoan.—Population, 908.

Casiguran.—Population, 8,662; situated 22 miles from Albay.

Castilla.—Population, 2,353; situated 18 miles from Albay.

Donsol.—Population, 5,500; situated 16 miles from Albay.

Gubat.—Population, 13,359; situated 52 miles from Albay.

Guinobatan.—Population, 20,500; situated 11 miles from Albay.

Irocin.—Population, 5,224; situated 62 miles from Albay.

Jovellar.—Population, 5,279; situated 10 miles from Albay.

Juban.—Population, 6,000.

Legaspi.—Population, 6,017; situated ¼ mile from Albay.

Libog.—Population, 6,569, the township having 4,000. It is situated 8 miles from Albay.

Libon.—Population, 4,125; situated 22 miles from Albay.

Ligao.—Population, 17,371; situated 19 miles from Albay.

Magallanes.—Population, 2,377; situated 34 miles from Albay.

Malilipot.—Population, 5,995; situated 12 miles from Albay. It has regular highroads, the means of transportation being 4 and 2 wheel carts.

Malinao.—Population, 10,296.

Manito.—Population, 1,515; situated 1½ miles from Albay.

Matnog.—Population, 3,745; situated 53 miles from Albay.

Oas.—Population, 10,357; situated 22 miles from Albay.

Pandan.—Population, 2,143; situated 39 miles from Albay.

Payo.—An island with 2,800 inhabitants, situated at a 3 days' sail from Albay. It is composed of 8 pueblos.

Pilar.—Population, 5,458; situated 21 miles from Albay.

Polanguí.—Population, 10,050; situated 22 miles from Albay.

Sorsogon.—Population, 10,720; situated 14 miles from Albay.

Tabaco.—Population, 17,436; situated 16 miles from Albay. It has a telegraph station and a post-office.

Tivi.—Chief town of a district of 10,215 inhabitants; situated 22 miles from Albay.

Viga.—Population, 2,896; situated 21 miles from Albay.

Virac.—Population, 5,832.

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PROVINCE OF THE CAMARINES (NORTH AND SOUTH).

Situated to the southeast of Manila, it is bounded on the north by the Pacific Ocean, on the south by the Province of Albay, on the west by the District of Ragay and the Pacific Ocean, and on the east by the Pacific Ocean. The area is 3,829 square miles and the population 185,878.

SOUTH CAMARINES.—It is bounded on the north by North Camarines, on the east by Albay, and on the south-southwest by the Sea of Mindoro, and is crossed from northeast to southeast by a great mountain chain, covered with impenetrable forests of good building timber and inhabited by infieles. Its lakes are Buhi, Bato, and Baaso; in its extensive valleys are raised cacao, rice, maize, abacá, sugar cane, etc. Industry consists in the manufacture of fine clothes of simanay and guimara. It is divided into 35 pueblos and 268 barrios.

NORTH CAMARINES.—It is bounded on the north and northwest by the Pacific and the Bay of San Miguel, on the south by South Camarines, on the southwest by the Bay of Guinayangan, and on the west by the Province of Tayabas, and is covered with mountains and crossed by numerous rivers of great volume. In the interior are virgin forests inhabited by tribes of negritos, and there are unworked mines of gold, silver, iron, copper, and lead. The rivers abound in fish and there are good wagon roads. It is divided into 8 pueblos and 25 barrios.

The capital is **Nueva Cáceres,** with a population of 11,550. It is situated on the Naga River, navigable from the sea to the capital by vessels of from 150 to 200 tons, and it is 207 miles distant from Manila. It was the residence of the bishop of the diocese, of the alcalde mayor, and of the chief of the command of gendarmery, and has a cathedral, a bishop's palace, seminary for clergymen of the country, normal school, a court-house, etc. There is a post office and a railroad and telegraph station.

CITIES AND TOWNS.

Baao.—Population, 6,759; situated 17 miles from Nueva Cáceres.

Basud.—Population, 1,874; situated 11 miles from Nueva Cáceres.

Bato.—Population, 4,861.

Bombon.—Population, 2,656.

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Buhi.—Population, 10,000; situated 34 miles from Nueva Cáceres.

Bula.—Population, 2,800; situated 10 miles from Nueva Cáceres.

Calabanga.—Population, 5,704; situated 7 miles from Nueva Cáceres.

Calasagasan.—Population, 813; situated 49 miles from Nueva Cáceres.

Camaligan.—Population, 5,049. There are highroads to Callejón, Nueva Cáceres, and Camaman.

Camaman.—Population, 5,959.

Capalonga.—Population, 1,692.

Caramoan.—Population, 6,697.

Daet.—Population, 10,650; situated 50 miles from Nueva Cáceres.

Gainza.—Population, 2,631.

Goa.—Population, 7,748.

Indan.—Population, 5,800; situated 55 miles from Nueva Cáceres.

Iriga.—Population, 17,094; situated 22 miles from Nueva Cáceres.

Labo.—Population, 4,213.

Lagonoy.—Population, 8,500. It is the capital of the district of the same name.

Libmanan.—Population, 14,512; situated 14 miles from Nueva Cáceres, to which it is connected by highroads. It has a post office and telegraph station.

Lupi.—Population, 765; situated 13 miles from Nueva Cáceres.

Mabatobato.—Population, 849.

Magarao.—Population, 5,744; situated 3 miles from Nueva Cáceres.

Mambulao.—Population, 1,182.

Manguirin.—Population, 1,300; situated 9 miles from Nueva Cáceres.

Milaor.—Population, 5,120; situated 2 miles from Nueva Cáceres.

Minalabag.—Population, 3,869; situated 4 miles from Nueva Cáceres.

Nabua.—Population, 17,789; situated 17 miles from Nueva Cáceres.

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Pamplona.—Population, 3,647; situated 5 miles from Nueva Cáceres. It has a post office.

Paracale.—Population, 3,211; situated 68 miles from Nueva Cáceres.

Pasacao.—Population, 1,548.

Pili.—Population, 3,635; situated 9 miles from Nueva Cáceres.

Quipayo.—Population, 1,793; situated 7 miles from Nueva Cáceres.

Ragay.—Population, 2,300; situated 38 miles from Nueva Cáceres. It has a telegraph station.

Sagnay.—Population, 3,985; situated 13 miles from Nueva Cáceres.

San Fernando.—Population, 3,271. It has a highway to the capital and one to Puscacao.

San José.—Population, 9,000; situated 24 miles from Nueva Cáceres.

San Vincente.—Population, 1,325.

Sipocot.—Population, 1,066; situated 22 miles from Nueva Cáceres.

Siroma.—Population, 679; situated 14 miles from Nueva Cáceres.

Talisay.—Population, 3,567; situated 52 miles from Nueva Cáceres.

Tigaon.—Population, 4,100; situated 5 miles from Nueva Cáceres.

Tinambag.—Population, 2,497; situated 19 miles from Cáceres.

DISTRICT OF AMBURAYAN.

This district is confined to the slopes of the Malaya Ridge, and is bounded on the north by Tiagan and Ilocos Sur, on the east by Lepanto, on the south by La Unión, and on the west by Bengued. The population is 30,150.

The capital is **Alilem,** with a population of 8,014.

DISTRICT OF APAYOS.

This district is situated north of Cagayán de Luzón, and consists of some forty ranches. The population is 6,000.

The capital is **Bugabagu.**

PROVINCE OF BATAAN.

Situated in the center of the island of Luzon, it is bounded on the north by Pampanga, on the south by the Bay of Manila,

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on the east by Zambales, and on the west by the China Sea. The area is 1,023 square miles, and the population 52,000.

The capital is **Balanga,** with a population of 9,000. It is situated 34 miles from Manila, and has highroads to the neighboring towns. There is a post office and telegraph station.

CITIES AND TOWNS.

Abucay.—Population, 7,185; situated 3 miles from Balanga.

Bagac.—Population, 1,655; situated 8 miles from Balanga.

Dinalupijan.—Population, 738; situated 15 miles from Balanga.

Hermosa.—Population, 2,649; situated 11 miles from Balanga.

Mabatan.—Population, 1,766; situated 2 miles from Balanga, to which there is a railway.

Mariveles.—Population, 1,429; situated 30 miles from Balanga.

Moron.—Population, 2,622; situated 25 miles from Balanga.

Orani.—Population, 6,400; situated 7 miles from Balanga.

Orion.—Population, 10,373; situated 6 miles from Balanga.

Pilar.—Population, 3,471; situated 3 miles from Balanga.

Samal.—Population, 5,233; situated 6 miles from Balanga.

PROVINCE OF BATANGAS.

Batangas is an important province owing to its geographical position, being situated south of Luzon and opposite Mindoro; its close proximity to the capital, and its easy communication by land and sea. Within its boundaries is Lake Bingabon, in the center of which rises the isolated cone of the Taal Volcano, over 1,200 feet high. It is noted for its high mountains, thick woods, and fertile valleys, over which roam droves of buffalo, horses, etc. The principal industries of the province are the manufacture of silk, abacá, and cotton fabrics, and dyestuffs. The province is divided into 24 pueblos and 471 barrios. The area is 1,153 square miles and the population 212,000.

The capital is **Batangas,** with a population of 39,358. It is situated 72 miles from Manila, in a cove of its name, on the Calumpang River, and has a spacious and convenient harbor. During the month of February there are held a number of agricultural and industrial fairs and expositions in this city,

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which are much patronized by the populace of the province, and where labor and progress are stimulated by the awarding of prizes. There are some 4,000 houses of simple and elegant construction, among which may be mentioned the royal palace, parish convent, and tribunal. The city was the residence of the alcalde mayor and a number of public functionaries.

CITIES AND TOWNS.

Balayang.—Population, 24,747; situated 30 miles from Batangas.

Bauang.—Population, 39,659; situated 4 miles from Batangas. It has many highroads.

Calaca.—Population, 8,288; situated 23 miles from Batangas.

Calatagan.—Population, 964; situated 41 miles from Batangas.

Cuenca.—Population, 6,735; situated 8 miles from Batangas, with which it communicates by a highroad.

Ibaan.—Population, 8,900; situated 5 miles from Batangas. It has two highroads.

Lemery.—Population, 2,890, its township having 14,000; situated 15 miles from Batangas.

Lian.—Population, 5,889; situated 36 miles from Batangas. It has highroads to Tuy and Nasugbu.

Lipa.—Population, 40,733; situated 18 miles from Batangas.

Lobi.—Population, 6,472; situated 20 miles from Batangas.

Nasugbu.—Population, 8,627; situated 44 miles from Batangas. It has a highroad to Lian.

Prosario.—Population, 12,435; situated 16 miles from Batangas. It is connected by highroads with Tiaon, Lipa, Ibaan, San Juan, and Taisan.

San José.—Population, 10,000; situated 9 miles from Batangas.

San Juan.—Population, 14,017; situated 48 miles from Batangas. It has a highroad to Rosario.

San Luis.—Population, 5,201; situated 16 miles from Batangas.

Santo Tomas.—Population, 10,769; situated 33 miles from Batangas.

Taal.—Population, 33,378; situated 13 miles from Batangas.

Taisan.—Population, 6,971.

Talisay.—Population, 8,111; situated 37 miles from Batangas.

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Tanauan.—Population, 20,038; situated 27 miles from Batangas on the principal highroad from Manila to Batangas.

Tuy.—Population, 10,150; situated 24 miles from Batangas. There are highways to Balayan, Sian, Nasugbú, and Alfonso.

DISTRICT OF BENGUET.

Situated in the land of the Igorrotes, it is bounded on the north by the District of Lepanto, on the east by the Province of Nueva Vizcaya, on the south by Pangasan, and on the west by La Unión. It is a volcanic and very irregular country, covered with lofty pines of good quality and crossed by numerous streams and rivers in which small quantities of gold are found. The area is 328 square miles and the population 15,932, divided among two pueblos, 25 visitas, and 128 rancherías of subdued infieles.

The capital is **La Trinidad,** with a population of 2,000. It was the residence of the political-military commander, lieutenant of the gendarmery, and parish priest.

CITIES AND TOWNS.

Adavang.—Population, 312.

Ambuclao.—Population, 145.

Amlimay.—Population, 336; situated 23 miles from La Trinidad.

Atoc.—Population, 1,317.

Azual.—Population, 615; situated 16 miles from La Trinidad.

Baguio.—Population, 661; situated 26 miles from La Trinidad.

Balacbac.—Population, 688.

Baningan.—Population, 379; situated 6 miles from La Trinidad.

Benneng.—Population, 500.

Bojod.—Population, 448; situated 18 miles from La Trinidad.

Bubon.—Population, 169; situated 32 miles from La Trinidad.

Buguias.—Population, 650.

Cabayan.—Population, 844; situated 19 miles from La Trinidad.

Capangan.—Population, 583; situated 7 miles from La Trinidad.

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Carao.—Population, 502.

Daclan.—Population, 967; situated 13½ miles from La Trinidad.

Galiano.—Population, 1,330; situated 11 miles from La Trinidad.

Ibatanes.—Population, 480.

Loo.—Population, 724; situated 29 miles from La Trinidad.

Lutab.—Population, 415; situated 16 miles from La Trinidad.

Magangan.—Population, 301; situated 13 miles from La Trinidad.

Paiquet.—Population, 622; situated 13 miles from La Trinidad.

Palina.—Population, 704.

Palintaang.—Population, 900.

Quibungan.—Population, 519; situated 20 miles from La Trinidad.

Salipaang.—Population, 300.

Sapuan.—Population, 214; situated 7 miles from La Trinidad.

Tacquian.—Population, 386.

Tavio.—Population, 537; situated 8 miles from La Trinidad.

Tinec.—Population, 229.

Tivalbal.—Population, 376; situated 7 miles from La Trinidad.

Tublay.—Population, 996.

Vac.—Population, 1,000.

DISTRICT OF BINATANGAN.

Situated on the eastern coast of Luzon, it is bounded on the north by Isabela, on the east by the Pacific Ocean, on the south by the District of Príncipe, and on the west by the districts of Nueva Vizcaya and Nueva Écija.

The capital is **Binatangan.**

PROVINCE OF BONTOC.

It is situated northeast of the Province of Lepanto in a mountainous country, and has a population of 24,502, divided among two pueblos and a number of rancherías. The climate is temperate and moist; there are a number of mineral springs as well as much iron pyrites and beds of silver-bearing galena.

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The capital is **Bontoc,** with a population of 5,774. It is situated 253 miles from Manila, and was the home of the governor.

CITIES AND TOWNS.

Aga-oa.—Population, 400; situated 22 miles from Bontoc.

Alap.—Population, 713, the township having 849; situated 10 miles from Bontoc.

Ang-Baiong.—Population, 163; situated 13 miles from Bontoc.

Anquien.—Population, 996, the township having 1,115; situated 16 miles from Bontoc.

Antadao.—Population, 328; situated 11 miles from Bontoc.

Balili.—Population, 297; situated 10 miles from Bontoc.

Balioang.—Population, 504; situated 13 miles from Bontoc.

Balugang.—Population, 1,312; situated 18 miles from Bontoc.

Banaue.—Population, 638, the township having 872; situated 27 miles from Bontoc.

Bang-Inang.—Population, 144; situated 30 miles from Bontoc.

Barligt.—Population, 439; situated 17 miles from Bontoc.

Betuagan.—Population, 285, the township having 366; situated 14 miles from Bontoc.

Cang-Co.—Population, 398; situated 9 miles from Bontoc.

Dalican.—Population, 457, the township having 587; situated 7 miles from Bontoc.

Fidelisan.—Population, 478, the township having 531; situated 16 miles from Bontoc.

Guina-Ang.—Population, 1,071; situated 9 miles from Bontoc.

Gung-Ugong.—Population, 716; situated 12 miles from Bontoc.

Inapuy.—Population, 417; situated 17 miles from Bontoc.

Mainit.—Population, 417, the township having 547; situated 9 miles from Bontoc.

Malitcong.—Population, 651, the township having 777; situated 8 miles from Bontoc.

Paquigang.—Population, 304, the township having 319; situated 12 miles from Bontoc.

Pok-Itang.—Population, 543; situated 28 miles from Bontoc.

Quing-Aquing.—Population, 512.

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Sacasacan.—Population, 695; situated 10 miles from Bontoc.

Sadanga.—Population, 519, the township having 648; situated 20 miles from Bontoc.

Sagada.—Population, 1,000; situated 20 miles from Bontoc.

Samuqui.—Population, 545; situated ½ mile from Bontoc.

Tac-Cong.—Population, 645; situated 14 miles from Bontoc.

Tanolo.—Population, 385; situated 13 miles from Bontoc.

Talubin.—Population, 632; situated 8 miles from Bontoc.

Tanulon.—Population, 492; situated 17 miles from Bontoc.

Tetapan.—Population, 1,340; situated 9 miles from Bontoc.

Tugtucang.—Population, 407, the township having 657; situated 7 miles from Bontoc.

PROVINCE OF BULACAN.

This is one of the smallest, but richest provinces of the archipelago. It is bounded on the east by Nueva Écija, on the south by Manila, on the west by the Bay and Province of Pampanga, and on the north by the Province of Pampanga. The area is 965 square miles, and the population 230,000. It is crossed by several ramifications of the Caraballo Mountains and by the great Pampanga River, which empties into Manila Bay by several mouths, some of which are navigable. The land is fairly cultivated; there are sugar mills, and cacao, rice, indigo, sesame, and fruits are grown. There are mines of iron and magnetite, and quarries of stone, alabaster, etc. Industry is confined to the manufacture of striped cloths of silk and cotton, to fishing, to washing the sandy bottoms of rivers for a few particles of gold, and to the making of hats and cigar cases. The province is divided into 25 pueblos and 464 barrios or visitas.

The capital is **Bulacan,** with a population of 13,186. It is situated 22 miles from Manila, has a church, a town hall, about 2,000 stone houses, and was the residence of the provincial authorities.

CITIES AND TOWNS.

Angat.—Population, 8,050; situated 19 miles from Bulacan.

Baliuag.—Population, 14,122; situated 13 miles from Bulacan.

Barasoain.—Population, 9,675; situated 6 miles from Bulacan.

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Bigaa.—Population, 8,120; situated 3½ miles from Bulacan.

Bocaue.—Population, 10,345; situated 4⅓ miles from Bulacan.

Bustos.—Population, 7,025; situated 2 miles from Bulacan.

Calumpit.—Population, 15,072; situated 12 miles from Bulacan.

Guiguinto.—Population, 5,115; situated 2 miles from Bulacan.

Hagonoy.—Population, 20,120; situated 13 miles from Bulacan.

Malolos.—Population, 14,599; situated 6 miles from Bulacan.

Marilao.—Population, 5,075; situated 8 miles from Bulacan.

Meicauayan.—Population, 8,119; situated 11 miles from Bulacan.

Norzagaray.—Population, 5,305; situated 16 miles from Bulacan.

Obando.—Population, 7,948; situated 7 miles from Bulacan.

Paombong.—Population, 10,297; situated 8 miles from Bulacan.

Polo.—Population, 7,549; situated 7 miles from Bulacan.

Pulilan.—Population, 10,058; situated 8 miles from Bulacan.

Quingua.—Population, 8,854; situated 7 miles from Bulacan.

San Ildefonso.—Population, 6,601; situated 19 miles from Bulacan.

San José.—Population, 2,397; situated 16 miles from Bulacan.

San Miguel de Mayumo.—Population, 20,460; situated 25 miles from Bulacan.

San Rafael.—Population, 8,469; situated 12 miles from Bulacan. There is a railroad to Balinag, Angat, and San Miguel.

Santa Isabel.—Population, 8,125; situated 6 miles from Bulacan.

Santa Maria de Pandi.—Population, 10,508; situated 8 miles from Bulacan.

DISTRICT OF CABUGAOAN.

Situated north of Luzon, it is bounded on the north by the Province of Cagayán, on the east by the command of Apayaos,

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on the south by the Province of Abra, and on the west by Ilocos Norte.

The capital is **Cubagaoan.**

PROVINCE OF CAGAYÁN.

Situated north of the Province of Isabela, it is bounded on the north by the China Sea, and on the east and west by the Sierra Madre Mountains and the Cordillera of the north (an extension of the central cordillera). It is the coldest territory in the archipelago, so that in January and February the body must be given additional protection. In other seasons the air lacks purity, on account of the excessive humidity maintained by the thick forests and more than fifty rivers and creeks. Owing to the good quality of the soil, the fruits common to the country are raised, the tobacco of its plantations being specially celebrated. Stock is owned to the extent of some 31,000 carabaos (buffalo), 30,000 head of cattle, 14,000 swine, and 15,000 horses. The area is 6,587 square miles, and the population 112,357.

The capital is **Tuguegarao,** with a population of 16,826. It is situated on the right bank of the Rio Grande de Cagayán (ch. 11, p. 116). Among the principal buildings are the government house (of rubble masonry and elegant architecture), the court-house, church, and town hall. The authorities residing here were the mayor and judge and a number of treasury, justice, and fomento officials.

CITIES AND TOWNS.

Abulug.—Population, 5,880; situated 79 miles from Tuguegarao.

Alcala.—Population, 5,471; situated 21 miles from Tuguegarao. It has a telegraph station.

Aparri.—Population, 11,262; situated 54 miles from Tuguegarao. There is a telegraph station. The captain of the port resided here.

Buguey.—Population, 1,120; situated 58 miles from Tuguegarao.

Camanaliugan.—Population, 4,198; situated 53 miles from Tuguegarao.

Claveria.—Population, 4,641; situated 171 miles from Tuguegarao, with which it is connected by a highroad.

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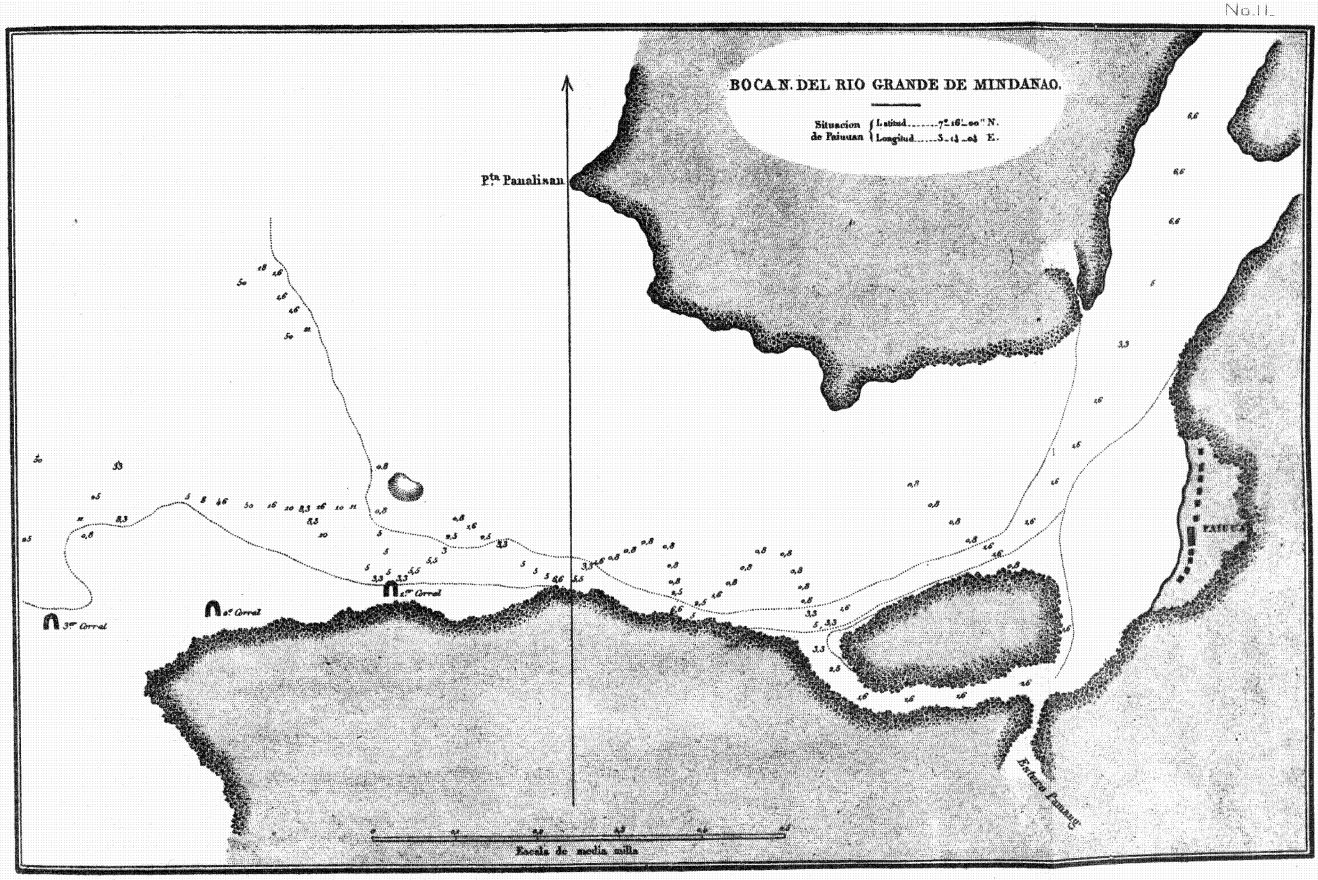
No. 11.


BOCA N. DEL RIO GRANDE DE MINDANAO.
Situacion de Paiuuan
Latitud.....7°.16'.00" N.
Longitud.....3.14.04 E.
Pta Panalisan
3er Corral
2o Corral
1er Corral
PAIUUA
Estero Pamang
Escala de media milla

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Enrile.—Population, 7,000; situated 3 miles from Tuguegarao.

Gattaran.—Population, 805; situated 3 miles from Tuguegarao.

Iguig.—Population, 4,000; situated 11 miles from Tuguegarao.

Lalloc.—Population, 6,475; situated 63 miles from Tuguegarao. It has a post office and telegraph station.

Malaueg.—Population, 3,819; situated 28 miles from Tuguegarao.

Nasiping.—Population, 1,023; situated 34 miles from Tuguegarao.

Pamplona.—Population, 2,404; situated 79 miles from Tuguegarao.

Piat.—Population, 2,716; situated 24 miles from Tuguegarao.

Santo Niño.—Population, 2,891.

Solana.—Population, 5,578; situated 4 miles from Tuguegarao.

Tabang.—Population, 2,897; situated 14 miles from Tuguegarao.

Tuao.—Population, 4,986; situated 26 miles from Tuguegarao.

PROVINCE OF CAVITE.

An important province on account of its special situation between Manila Province and Bay Lake, its fertile and handsome coasts, and the military arsenal of the archipelago located here. It has many mountains grown over with fine timber, the valleys being watered by numerous streams. The area is 488 square miles and the population 133,926.

The capital is **Cavite,** with a population of 1,497. It is situated to the north on a peninsula in Manila Bay, and is connected with Manila by a good road. It has a telegraph station communicating with the whole island of Luzon. It is a fortified place, has an arsenal, and is one of the prettiest of towns. All its buildings are of stone, among them being several churches, an extensive tobacco factory, a theater, casino, and several government offices. Here resided the governor, judge, attorney, and a number of treasury, administration, and fomento officials, besides the regular garrison and the employees of the arsenal. Some 3 miles to the south is

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the region known as Tierra Alta (high country); here are many villas and country houses, being a good place for foreigners to recuperate.

CITIES AND TOWNS.

Alfonso.—Population, 7,660; situated 25 miles from Cavite.

Amadeo.—Population, 3,873; situated 19 miles from Cavite.

Bacoor.—Population, 13,113; situated 10 miles from Cavite.

Bailen.—Population, 4,239; situated 26 miles from Cavite.

Caridad (La).—Population, 1,258; situated 1½ miles from Cavite.

Carmona.—Population, 3,959; situated 17 miles from Cavite.

Cavite el Viejo (ch. 5, p. 49).—Population, 9,484; situated 10 miles from Cavite.

Imus.—Population, 14,676; situated 18 miles from Cavite.

Indang.—Population, 1,500, the township having 13,344; situated 24 miles from Cavite.

Magallanes.—Population, 1,200; situated 43 miles from Cavite.

Maragondon.—Population, 8,313; situated 43 miles from Cavite.

Mendez Nuñez.—Population, 3,745; situated 29 miles from Cavite.

Naic.—Population, 9,215; situated 17 miles from Cavite.

Noveleta.—Population, 2,804; situated 7 miles from Cavite.

Perez Dasmariñas.—Population, 4,696; situated 15 miles from Cavite. There is a wagon road to Silan and Imus.

Rosario.—Population, 6,385; situated 10 miles from Cavite.

San Francisco de Malabon.—Population, 9,055; situated 12 miles from Cavite.

San Roque (ch. 5, p. 49).—Population, 3,182; situated 1 mile from Cavite.

Santa Cruz.—Population, 8,546; situated 49 miles from Cavite.

Silang.—Population, 7,411; situated 34 miles from Cavite.

Ternate.—Population, 1,828; situated 32 miles from Cavite.

DISTRICT OF CAYAPAS.

Situated at the source of the Rio Amburayang, it is bounded on the north by the District of Quiangan, on the south by

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Nueva Vizcaya, on the east by the peak of Salesas, and on the west by Benguet. It consists of 9 ranches.

The capital is **Cayapa.**

PROVINCE OF ILOCOS NORTE.

Situated in the northwest of Luzon, it is one of the most industrious provinces in the island. The soil, in general rugged, yields all kinds of fruit. Live stock of fine quality is one of the chief sources of wealth; the valleys are fertilized by many rivers descending from the great sierra. There is a good pike communicating with Manila and running through several provinces. The pueblos of the interior are also connected by good roads. The climate is agreeable, especially to foreigners, as in certain seasons and certain regions the Réamur thermometer descends to 80°; it would be a good place for the establishment of acclimating colonies, which would be of great benefit to persons unable to stand the heat of other parts of the country, and to those attacked by dysentery. In Lice Mountain is a grotto of about 39 acres in area. The province is divided into 16 pueblos, 120 barrios, and 56 rancherías of subdued infieles. The area is 1,873 square miles and the population 156,900.

The capital is **Laoag,** with a population of 37,094. It was the residence of the alcalde mayor and a number of public functionaries.

CITIES AND TOWNS.

Bacarra.—Population, 13,735; situated 3 miles from Laoag.

Badoc.—Population, 10,861; situated 22 miles from Laoag.

Bangui.—Population, 5,649; it is situated 38 miles from Cavite and is connected with the capital by a highroad.

Banna.—Population, 2,587; situated 19 miles from Laoag.

Batac.—Population, 17,625; situated 10 miles from Laoag.

Dingras.—Population, 12,600; situated 11 miles from Laoag.

Nagpartian.—Population, 1,985; situated 28 miles from Laoag.

Paoay.—Population, 11,848; situated 15 miles from Laoag.

Pasuquin.—Population, 5,616; situated 9 miles from Laoag.

Piddig.—Population, 10,841; situated 8 miles from Laoag. There is a wagon road to Solsona and San Miguel.

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San Miguel Sarrat.—Population, 9,015; situated 3 miles from Laoag.

San Nicolas.—Population, 9,578; situated 1½ miles from Laoag.

Solsona.—Population, 3,991; situated 15 miles from Laoag.

Vintar.—Population, 11,803; situated 4 miles from Laoag.

PROVINCE OF ILOCOS SUR.

Situated in the northwest of Luzon, it is bounded on the north by Ilocos Norte, on the south by La Unión, on the east by Abra, and on the west by the China Sea. It is a rather flat country, watered by several rivers, among them being the Abra, a river of great volume. The soil is excellent in quality, producing in abundance all kinds of vegetables. Many medicinal plants grow in the mountains. One of the chief sources of wealth is stock raising, the number of cattle and swine being very large. The area is 644 square miles and the population 172,836.

The capital is **Vigan,** with a population of 19,000. It is situated 238 miles from Manila and has a post office and telegraph station. It is also the capital of the bishopric of Nueva Segovia. It has good buildings, among which may be mentioned the cathedral, episcopal palace, casa real, court-house, administration building, and council seminary. It was the residence of the mayor, judge, and a number of fomento, justice, and treasury officials, besides the cathedral dignitaries, the rector, and the professor of the seminary.

CITIES AND TOWNS.

Bantay.—Population, 6,449; situated ½ mile from Vigan.

Cabugao.—Population, 8,259; situated 17 miles from Vigan. There is a wagon road to Ilocos Sur and Ilocos Norte and to Vigan.

Candon.—Population, 15,797; situated 29 miles from Vigan. It has a telegraph station.

Caoayan.—Population, 6,050; situated 3 miles from Vigan, with a port called Pandan for merchant and mail steamers. It has three highroads.

Lapo.—Population, 6,000; situated 13 miles from Vigan.

Magsingal.—Population, 8,446; situated 6 miles from Vigan.

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Narbacan.—Population, 16,500; situated 15½ miles from Vigan.

Nueva Coveta.—Population, 789.

Salcedo.—Population, 914; situated 41 miles from Vigan.

San Esteban.—Population, 2,132; situated 23 miles from Vigan.

San Ildefonso.—Population, 2,033; situated 3 miles from Vigan.

San Vicente.—Population, 5,237; situated 1½ miles from Vigan.

Santa.—Population, 8,532; situated 4 miles from Vigan.

Santa Catalina.—Population, 5,100; situated 1 mile from Vigan.

Santa Cruz.—Population, 5,876; situated 42 miles from Vigan and 68 miles from the station of Dagupan.

Santa Lucia. —Population, 7,113; situated 40 miles from Vigan.

Santa Maria.—Population, 10,030; situated 19 miles from Vigan.

Santiago.—Population, 4,087; situated 26 miles from Vigan.

Santo Domingo.—Population, 8,931; situated 4 miles from Vigan.

Sevilla.—Population, 1,133; situated 45 miles from Vigan.

Sinait.—Population, 7,936; situated 22 miles from Vigan.

Tagudin.—Population, 4,055; situated 52 miles from Vigan. It has a telegraph station.

PROVINCE OF LA INFANTA.

It is bounded on the north by Príncipe, on the south by Tayabas and Laguna, on the east by the Pacific Ocean, and on the west by Nueva Écija. The area is 3,773 square miles and the population 10,200.

The capital is **Binangonán de Lampón,** with a population of 7,557. It is situated 758 miles from Manila, and communication across the Province of Laguna is difficult and laborious.

CITIES AND TOWNS.

Polillo.—Population, 1,400; situated 19 miles from Binangonán. It has a post office.

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PROVINCE OF ISABELA DE LUZON.

It is situated north of Manila, between the Sierra Madre and the Cordillera Central or Caraballos mountains. It is covered with thick forests which are peopled by infieles and abound in timber for building purposes. The ground is much broken and is watered by several rivers. Maize, fruits, palay, and good tobacco are grown, and a great amount of live stock of all kinds is raised. There are in the province 9 pueblos, 5 barrios, and 40 rancherías of subdued infieles. The area is 4,467 square miles and the population 46,846.

The capital is **Ilagan,** with a population of 13,811. It is situated 329 miles from Manila. A detachment of exiles was located here, employed in pressing tobacco. The city was also the residence of the commander of the presidio.

CITIES AND TOWNS.

Angadanan.—Population, 2,739; situated 41 miles from Ilagan.

Cabagan Nuevo.—Population, 6,240.

Cabagan Viejo.—Population, 3,633; situated 26 miles from Ilagan. It has a telegraph station.

Carig.—Population, 2,447; situated 39 miles from Ilagan. It has a telegraph station.

Cauayan.—Population, 2,115; situated 16 miles from Ilagan.

Echague.—Population, 5,700; situated 34 miles from Ilagan.

Gamú.—Population, 6,101; situated 7 miles from Ilagan.

Palanan.—Population, 1,137; situated ½ mile from Ilagan.

Reina Mercedes.—Population, 3,286; situated 12 miles from Ilagan.

Santa Maria de Luzon.—Population, 2,607; situated 19 miles from Ilagan.

Tumauini.—Population, 4,814; situated 14 miles from Ilagan.

DISTRICT OF ITAVES.

It is bounded on the north by Apayaos, on the south by Ambabuy, Dinaguangan, and the Mayoyas mountains, on the east by Isabela, and on the west by Abra, Bontoc, and Quiangan. The population is 15,208.

The capital in **Magogao.**

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PROVINCE OF LAGUNA.

It is bounded on the north by Morong, on the south by Batangas and Tayabas, on the east by the sea, and on the west by Cavite and Manila. The area is 684 square miles and the population 177,000. It is a very broken country, covered with mountains; the valleys are watered by rivers and streams, in one of which is the cascade of Batacan, 500 feet high by 90 wide. Though the climate is very salubrious, fevers prevail during the rainy season, owing to the swamps formed by the rivers when unusually high. The principal peaks are Banajao, about 6,000 feet, and Maquilin, about 3,500 feet. The Bay lagoon (laguna), from which the province takes its name, is a small fresh-water sea from 105 to 108 miles in circumference, with the island of Talin in the middle. The coast towns communicate with Manila by means of sail and steam boats, which facilitate the exportation of its rich products. The territory is divided into 28 pueblos and 404 barrios.

The capital is **Santa Cruz,** with a population of 13,141. It is situated 48 miles from Manila and is celebrated for its markets. Highroads lead to Batangas, Cavite, Manila, and the Province of Tayabas. It has fine buildings and was the residence of the alcalde mayor, promotor fiscal, the chief of the command of the gendarmery, and a number of public functionaries.

CITIES AND TOWNS.

Alaminos.—Population, 4,600; situated 17 miles from Santa Cruz.

Baños (Los).—Population, 2,756; situated 65 miles from Santa Cruz.

Bay.—Population, 1,796; situated 15 miles from Santa Cruz.

Biñan.—Population, 19,786; situated 41 miles from Santa Cruz. It has highroads leading to Manila via Santa Cruz, to Cavite, and to the neighboring cities.

Cabuyao.—Population, 8,888; situated 34 miles from Santa Cruz.

Calamba.—Population, 11,476; situated 27 miles from Santa Cruz. It has highroads to Batangas, Cabuyao, and Los Baños, and a telegraph station.

Calauang.—Population, 3,107; situated 15 miles from Santa Cruz.

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Cavinti.—Population, 5,515; situated 9 miles from Santa Cruz.

Lilio.—Population, 5,000; situated 13 miles from Santa Cruz.

Longos.—Population, 1,413; situated 4½ miles from Santa Cruz.

Luisiana.—Population, 3,802; situated 13 miles from Santa Cruz.

Lumbang.—Population, 4,293; situated 1 mile from Santa Cruz.

Magdalena.—Population, 2,352; situated 7 miles from Santa Cruz. It has highroads leading to Santa Cruz, Majayjay, Lilio, and Nagcarlan.

Majayjay.—Population, 6,528.

Mavitac.—Population, 1,431; situated 25 miles from Santa Cruz.

Nagcarlang.—Population, 12,976; situated 9 miles from Santa Cruz.

Paete.—Population, 2,887; situated 5 miles from Santa Cruz. It has a highroad to the capital.

Pagsajan.—Population, 6,327; situated 4 miles from Santa Cruz. It has highroads leading to Santa Cruz, Magdalena, and Lumban.

Panjil.—Population, 2,459; situated 16 miles from Santa Cruz.

Paquil.—Population, 1,719; situated 9 miles from Santa Cruz. It has highroads leading to Paete and Panjil.

Pila.—Population, 5,987; situated 6 miles from Santa Cruz.

San Antonio.—Population, 1,649; situated 9 miles from Santa Cruz.

San Pablo.—Population, 19,537; situated 10 miles from Santa Cruz. It has a number of highroads.

San Pedro Tunasan.—Population, 3,700; situated 43 miles from Santa Cruz.

Santa Maria.—Population, 840; situated 24 miles from Santa Cruz.

Santa Rosa.—Population, 9,434; situated 29 miles from Santa Cruz.

Siniloan.—Population, 5,659; situated 15 miles from Santa Cruz.

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PROVINCE OF LEPANTO.

Situated in the district of the Igorrotes, it is bounded on the east by Bontoc, on the north by Abra, on the west by Tiagan, and on the south by Benguet. The area is 835 square miles and the population 19,422.

The capital is **Cervantes,** with a population of 948. It is also the capital of the district of Cayán, and is situated 264 miles from Manila.

CITIES AND TOWNS.

Angaqui.—Population, 697; situated 13 miles from Cervantes.

Baguen.—Population, 352.

Balagua.—Population, 299; situated 9 miles from Cervantes.

Banaas.—Population, 375; situated 17 miles from Cervantes.

Banco.—Population, 37; situated 8 miles from Cervantes.

Banguitau.—Population, 181.

Besao.—Population, 660; situated 18 miles from Cervantes.

Bonguen.—Population, 1,112; situated 14 miles from Cervantes.

Cadananan.—Population, 488; situated 10 miles from Cervantes.

Cagubatan.—Population, 114; situated 9 miles from Cervantes.

Cayan.—Population, 650; situated 6 miles from Cervantes. There is a highway to Bontoc.

Dagnian.—Population, 354.

Dain.—Population, 500; situated 2 miles from Cervantes.

Data.—Population, 471.

Gayan.—Population, 181; situated 19 miles from Cervantes.

Guinzadan.—Population, 762; situated 8 miles from Cervantes.

Ibanao.—Population, 318.

Lenga.—Population, 200; situated 8 miles from Cervantes.

Lessep.—Population, 263.

Lubon.—Population, 700; situated 10 miles from Cervantes. It has a highroad to Bontoc.

Luyue.—Population, 750; situated 15 miles from Cervantes.

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Magneymey.—Population, 118.

Malaya.—Population, 684; situated 8 miles from Cervantes.

Mansiqui.—Population, 176; situated 17 miles from Cervantes.

Masla.—Population, 530; situated 11 miles from Cervantes. It has a highroad to Bontoc.

Maylec.—Population, 164.

Namatec.—Population, 265; situated 19 miles from Cervantes.

Namipil.—Population, 605; situated 9 miles from Cervantes.

Navosen.—Population, 344; situated 5 miles from Cervantes.

Otucan.—Population, 381.

Pandaya.—Population, 269; situated 9 miles from Cervantes.

Pilipil.—Population, 246; situated 7 miles from Cervantes.

Pingat.—Population, 914; situated 15 miles from Cervantes.

Quinali.—Population, 138; situated 13 miles from Cervantes.

Sabangan.—Population, 700; situated 17 miles from Cervantes.

Silipil.—Population, 633.

Sumadell.—Population, 550; situated 13 miles from Cervantes.

Suyoc.—Population, 750; situated 15 miles from Cervantes.

Tacbac.—Population, 502; situated 14 miles from Cervantes.

Tadian.—Population, 450.

Tuboc.—Population, 1,107; situated 11 miles from Cervantes.

Ululin.—Population, 271; situated 4 miles from Cervantes.

Vila.—Population, 241.

PROVINCE OF MORONG.

It is bounded on the north by Bulacan, on the south by the Laguna de Bay, on the east by La Infanta, and on the west by Manila. The area is 422 square miles and the population 42,800. The province is in a mountainous country abounding in stone quarries, banks of jasperated marble, and gold beds. Much rice and sugar cane is raised.

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The capital is **Morong,** with a population of 9,430. It is situated 38 miles from Manila, has a telegraph station, and was the residence of the politico-military commander.

CITIES AND TOWNS.

Angono.—Population, 1,955; situated 16 miles from Morong.

Antipolo.—Population, 3,500; situated 8 miles from Morong. There are highways to Taytay and Cruz.

Baras.—Population, 1,217; situated 2 miles from Morong.

Binangonan.—Population, 7,624; situated 11 miles from Morong.

Bosoboso.—Population, 855; situated 10 miles from Morong.

Cainta.—Population, 2,275; situated 9 miles from Morong.

Cardona.—Population, 2,641; situated 3 miles from Morong.

Jalajala.—Population, 1,735; situated 21 miles from Morong.

Pililla.—Population, 2,000; situated 6 miles from Morong.

Tanay.—Population, 4,529; situated 4 miles from Morong.

Taytay.—Population, 6,800; situated 13 miles from Morong.

Teresa.—Population, 4,250; situated 3 miles from Morong.

PROVINCE OF NUEVA ÉCIJA.

Situated to the north of Manila, it is bounded on the north by Nueva Vizcaya, on the south by Bulacan, on the east by the Pacific Ocean, and on the west by Pampanga and Pangasinan. The area is 3,462 square miles, and the population 155,000. This province corresponds to the bishopric of Nueva Segovia; it is swept by strong winds the greater part of the year, so that it is impossible to approach its coast without danger. It has a healthful and agreeable climate. The principal industry is cattle raising. Where the winds do not strike there are very thick woods, in which large and small game finds shelter; rice, sugar, and much tobacco are raised in the plains. The province is divided into 22 pueblos, 87 barrios or visitas, and many rancherías of infieles (infidels), who for the most part neither pay tribute nor have any relations with the Christian pueblos, so that their number is unknown.

The capital is **San Isidro,** with a population of 7,056. It is situated some 69 miles from Manila. It has a telegraph

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station and was the residence of the judge and a number of administration, treasury, and fomento officials.

CITIES AND TOWNS.

Aliaga.—Population, 17,000; situated 16 miles from San Isidro.

Balungao.—Population, 3,848; situated 41 miles from San Isidro.

Bongabon.—Population, 2,117; situated 32 miles from San Isidro. It has a telegraph station.

Cabanatuan.—Population, 12,000; situated 16 miles from San Isidro. It has a telegraph station, and there is a highway to the towns of Bongabong, Talavera, and Aliaga.

Cabiao.—Population, 7,924; situated 5 miles from San Isidro.

Carranglan.—Population, 937; situated 63 miles from San Isidro.

Cuyapo.——Population, 9,350; situated 36 miles from San Isidro.

Gapan.—Population, 20,216; situated 4 miles from San Isidro.

Jaen.—Population, 4,651; situated 1 mile from San Isidro.

Lupao.—Population, 608.

Mampicuam.—Population, 3,241; situated 34 miles from San Isidro.

Peñaranda.—Population, 7,700; situated 2 miles from San Isidro.

Pontabangan.—Population, 1,513; situated 41 miles from San Isidro. It has a telegraph station.

Puncan.—Population, 501; situated 52 miles from San Isidro.

Rosales.—Population, 11,519; situated 38 miles from San Isidro. It has highroads to Manila and Ilocos and another transverse one through the province.

San Antonio.—Population, 7,269; situated 3 miles from San Isidro.

San José.—Population, 852; situated 42 miles from San Isidro.

San Juan de Guimba.—Population, 2,994.

San Quintín.—Population, 6,852; situated 55 miles from San Isidro.

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Santa Rosa.—Population, 4,324; situated 59 miles from San Isidro.

Santor.—Population, 2,921; situated 34 miles from San Isidro.

Talavera.—Population, 2,720; situated 44 miles from San Isidro.

Umingan.—Population, 5,848; situated 53 miles from San Isidro.

Zaragoza.—Population, 5,250; situated 10 miles from San Isidro.

PROVINCE OF NUEVA VIZCAYA.

It is situated in the central part, north of Manila and Cabalesian, between the beginning of three principal mountain ranges and the great Cagayán River, west of the District of Príncipe. Surrounded by high mountains, a large valley is formed where much rice and tobacco are grown; many domestic animals are raised in the mountains. The population is 23,511. There are good highways passing through all of the eight pueblos into which the province is divided.

The capital is **Bayombong,** with a population of 3,691. It is situated 166 miles from Manila.

CITIES AND TOWNS.

Aritao.—Population, 700; situated 13 miles from Bayombong.

Bagabag.—Population, 1,915; situated 13 miles from Bayombong.

Bambang.—Population, 3,387; situated 7 miles from Bayombong.

Diadi.—Population, 109; situated 22 miles from Bayombong.

Dupax.—Population, 2,229; situated 17 miles from Bayombong.

Ibung.—Population, 977; situated 11 miles from Bayombong.

Solano.—Population, 4,190; situated 3 miles from Bayombong.

PROVINCE OF PAMPANGA.

Situated to the north of Manila, it is bounded on the north by Tarlac, on the south by the Bay of Manila, on the east by Nueva Écija and Bulacan, and on the west by Zambales and

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Bataan. The area is 787 square miles, and the population 250,000, distributed among 22 pueblos and 329 barrios. It is divided into High and Low Pampanga, the former part being the more thickly populated, producing in abundance sugar cane, rice, indigo, tobacco, lentils, etc.; there are many sugar mills, and the manufacture of hats is highly developed. There is a great abundance of buffalo, deer, and wild boars; it has extensive and thick forests, inhabited by certain races of infieles.

The capital is **Bacolor,** with a population of 10,642. It is situated 47 miles from Manila, and has a good wagon road to the capital of the island, although communication is generally by sea. The city has a telegraph and railway station, and was the residence of the mayor and judge and a number of justice, treasury, and fomento officials.

CITIES AND TOWNS.

Angeles.—Population, 3,000, the township having 10,495; situated 11 miles from Bacolor.

Apalit.—Population, 11,753; situated 11 miles from Bacolor.

Arayat.—Population, 14,014; situated 10 miles from Bacolor.

Betis.—Population, 4,460; situated 2 miles from Bacolor.

Candaba.—Population, 14,585; situated 20 miles from Bacolor.

Florida Blanca.—Population, 7,654; situated 22 miles from Bacolor.

Guagua.—Population, 10,722; situated 3 miles from Bacolor.

Lubao.—Population, 21,175; situated 4 miles from Bacolor.

Mabalacat.—Population, 10,600; situated 15 miles from Bacolor.

Macabebe.—Population, 10,400; situated 13 miles by road and 6 miles by rail from Bacolor.

Magalang.—Population, 8,262; situated 19 miles from Bacolor.

Mexico.—Population, 17,099; situated 5 miles from Bacolor.

Minalin.—Population, 6,386; situated 15 miles from Bacolor.

Porac.—Population, 8,512; situated 14 miles from Bacolor.

San Fernando.—Population, 13,266; situated 4 miles from Bacolor. It has a telegraph station.

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San Luis.—Population, 10,298; situated 11 miles from Bacolor.

San Miguel.—Population, 1,887.

San Simon.—Population, 7,817; situated 13 miles from Bacolor.

Santa Ana.—Population, 6,132; situated 14 miles from Bacolor.

Santa Rita.—Population, 7,359; situated 1 mile from Bacolor.

Santa Tomas.—Population, 4,321; situated 10 miles from Bacolor.

Sexmoan.—Population, 7,969; situated 4 miles from Bacolor.

PROVINCE OF PANGASINAN.

Situated to the north of Manila, it is bounded on the north by La Unión, on the south by Pampanga and Zambales, on the east by La Unión and Vizcaya, and on the west by the China Sea. It forms an extensive plain, where rice and sugar are raised. In the forests abounds large and small game, while in the mountains a gold mine is worked by the Igorrotes; there are also mines of iron, magnetite, and sulphur in a pure state, and along the coast and in the rivers fish are abundant. The population is 295,105, divided among 27 pueblos and 474 visitas or barrios.

The capital is **Lingayen,** with a population of 18,886. It is situated 146 miles from Manila. It has a postoffice and telegraph station and was the residence of the mayor and judge, and a number of functionaries. There is a good parish church, and along a broad and long street are about 3,500 houses, some of stone.

CITIES AND TOWNS.

Aguilar.—Population, 4,412; situated 12 miles from Lingayen.

Alava.—Population, 6,100; situated 21 miles from Lingayen.

Alcala (Santa Cruz).—Population, 5,200, the township having 8,624; situated 27 miles from Lingayen. There are several highways.

Asingan.—Population, 3,522; situated 36 miles from Lingayen.

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Bayambang.—Population, 8,505. It has highroads to Lingayen, Dagupan, and San Carlos.

Binalonan.—Population, 10,295; situated 27 miles from Lingayen. Five highroads connect it with neighboring cities.

Binmaley.—Population, 13,787; situated 3 miles from Lingayen.

Calasiao.—Population, 13,753; situated 9 miles from Lingayen.

Dagupan.—Population, 16,000; situated 8 miles from Lingayen.

Malasiqui.—Population, 8,900; situated 16 miles from Lingayen, on the railway from Manila to Dagupan.

Manaoag.—Population, 17,500; situated 19 miles from Lingayen.

Mangaldan.—Population, 16,143; situated 13 miles from Lingayen. It is connected by highroads with Dagupan, Santa Bárbara, San Fabian, and San Jacinto.

Mangatarem.—Population, 10,146; situated 18 miles from Lingayen. There are highroads to Urbiztondon, Aguilar, and San Clemente.

Pozorrubio.—Population, 9,123, the township having 9,947; situated 25 miles from Lingayen.

Salasa.—Population, 7,067; situated 3 miles from Lingayen.

San Carlos.—Population, 23,934; situated 10 miles from Lingayen.

San Fabian.—Population, 9,018; situated 18 miles from Lingayen.

San Isidro.—Population, 2,531; situated 9 miles from Lingayen.

San Jacinto.—Population, 5,059; situated 14 miles from Lingayen. It is connected with several neighboring towns by highroads.

San Manuel.—Population, 590; situated 26 miles from Lingayen. Highroads connect it with San Nicolás, Binalonang, and Asingan.

San Nicolás.—Population, 10,204; situated 38 miles from Lingayen.

Santa Bárbara.—Population, 7,595; situated 14 miles from Lingayen. It is connected by highroads with Calasiao and Urdaneta.

Santa María.—Population, 3,939.

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Sual.—Population, 2,636; situated 11 miles from Lingayen.

Tayug.—Population, 19,612; situated 28 miles from Lingayen.

Urbistondo.—Population, 5,182; situated 19 miles from Lingayen.

Urdaneta.—Population, 16,588; situated 27 miles from Lingayen.

Villasis.—Population, 11,968; situated 28 miles from Lingayen.

PROVINCE OF EL PRÍNCIPE.

A military province depending in civil matters on Nueva Écija, it is situated on the east coast of the island, between the eastern slopes to the south of the Sierra Madre, the Bay of Casiguran, and the Dibut Cove. The country is covered with inaccessible mountains, grown over with luxuriant vegetation and peopled by the race of Ilongotes, who, while exceedingly cowardly, are fierce and bloody. The only things raised are abacá and palay, the inhabitants not cultivating this fertile soil owing to a lack of outlet for products. The area is 478 square miles and the population 5,000.

The capital is **Baler,** with a population of 1,911. It is situated at a distance of 112 miles from Manila, and was the residence of the governor and a number of the gendarmery. In order to communicate with Manila it is necessary to go to Bomgabong by horseback or in a hammock carriage, making a laborious journey of three days, during which neither shelter nor provisions can be found. From Bomgabong to Manila one can go in a carriage, crossing the territories of Nueva Écija and Bulacán.

CITIES AND TOWNS.

Casignan.—Population, 267; situated 9 miles from Baler.

Casiguran.—Population, 1,527; situated 9 miles from Baler.

DISTRICT OF QUIANGAN.

Situated in the northern part of Luzon, it is bounded on the north by Bontoc, on the south by Nueva Vizcaya, on the east by Nueva Vizcaya and Isabela, and on the west by Lepanto. The area is 303 square miles and the population 29,800.

The capital is **Quiangan,** situated 155 miles from Manila.

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PROVINCE OF TARLAC.

It is bounded on the west by the Province of Zambales, on the south by Pampanga, on the east by Nueva Écija, and on the north by Pangasinán. The area is 1,109 square miles, and the population is 115,000.

The capital is **Tarlac,** with a population of 9,668. It is situated 73 miles from Manila, and has a telegraph station.

CITIES AND TOWNS.

Anao.—Population, 7,000; situated 17 miles from Tarlac.

Banban.—Population, 3,196; situated 16 miles from Tarlac.

Camilig.—Population, 23,410; situated 16 miles from Tarlac.

Capas.—Population, 2,925; situated 11 miles from Tarlac. There is a railway from Manila to Tarlac.

Concepcion.—Population, 13,499; situated 10 miles from Tarlac.

Gerona.—Population, 9,261; situated 9 miles from Tarlac.

Moncada.—Population, 7,601; situated 18 miles from Tarlac.

Moriones.—Population, 1,289; situated 3 miles from Tarlac.

Murcia.—Situated 6½ miles from Tarlac.

O'Donnell.—Population, 1,988; situated 14 miles from Capas. It has a post office.

Paniqui.—Population, 8,712; situated 14 miles from Tarlac.

La Paz.—Population, 2,805; situated 9 miles from Tarlac.

Pura.—Population, 5,255; situated 12 miles from Tarlac.

San Clemente.—Population, 1,875; situated 21 miles from Tarlac.

Santa Ignacia.—Population, 1,374; situated 14 miles from Tarlac. There is a highroad to Manila.

Victoria.—Population, 10,362; situated 7 miles from Tarlac.

PROVINCE OF TAYABAS.

Situated to the southeast of Manila, it is bounded on the north by Laguna, on the south by the sea of Mindoro, on the east by Camarines Norte, and on the west by Batangas Province. The area is 1,919 square miles, and the population 105,576. It has easy communication with Manila by way of the coast of Batangas and Cavite, through the interior of

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Laguna, and by the Pasig River. The country is very mountainous, the principal base being Mount Majayjay, a strategic point of much importance. All the grains of the country are grown in its fields and valleys, and much stock is raised. Industry is quite advanced, cigar cases, hats, and various fabrics being made. The inhabitants occupy 22 pueblos and 373 visitas or barrios.

The capital is **Tayabas,** with a population of 15,000. It is situated 91 miles from Manila, in a flat country on the river of its name, and on the southern slopes of the Majayjay Mountains. There are dockyards in which good vessels are constructed. It was the residence of the alcalde mayor, promotor fiscal, and a number of officials of the treasury, fomento, etc.

CITIES AND TOWNS.

Atimonan.—Population, 10,000; situated 19½ miles from Tayabas. There is a highway to Gumaco and a telegraph station.

Calauag.—Population, 2,813; situated 57 miles from Tayabas.

Candelaria.—Population, 3,234; situated 4 miles from Tayabas.

Catanauan.—Population, 4,000; situated 60 miles from Tayabas.

Dolores.—Population, 2,571; situated 8 miles from Tayabas. There are highroads to Tiaon and San Pablo.

Guinayangan.—Population, 2,000; situated 70 miles from Tayabas. It has a ward called Catimó, where there is a telegraph station.

Gumaca.—Population, 7,571; situated 90 miles from Tayabas.

Lopez.—Population, 6,412; situated 32½ miles from Tayabas.

Lucban.—Population, 12,755; situated 8 miles from Tayabas. There are highroads to Alfonso XII, Majayjay, and Mamban.

Lucena.—Population, 7,000; situated 8 miles from Tayabas.

Macalelon.—Population, 3,000; situated 70 miles from Tayabas.

Mauban.—Population, 9,268; situated 32 miles from Tayabas.

Mulanay.—Population, 325.

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Pagbilao.—Population, 5,756; situated 6½ miles from Tayabas.

Pitogo.—Population, 3,011; situated 93 miles from Tayabas.

San Narciso.—Population, 1,087; situated 372 miles from Tayabas.

Sariava.—Population, 6,966; situated 6 miles from Tayabas.

Tiaon.—Population, 6,950; situated 26 miles from Tayabas.

Unisan.—Population, 3,155; situated 24 miles from Tayabas.

DISTRICT OF TIAGAN.

Situated in the northern part of Luzon, it is bounded on the north by Abra, on the south by Amburayan, on the east by Lepanto, and on the west by Ilocos Sur. The population is 3,041.

The capital is **San Emilio,** with a population of 109. It is situated 323 miles from Manila.

CITIES AND TOWNS.

Amamasan.—Population, 283.

Baan.—Population, 639.

Buduyan.—Population, 270.

Bugui.—Population, 282.

Concepcion.—Population, 353.

Lanenas.—Population, 285.

Limpa.—Population, 556.

Ligney.—Population, 509.

Matbo.—Population, 472.

Paltoc.—Population, 770; situated 5 miles from San Emilio.

Paspasaqui.—Population, 312.

Sanz.—Population, 400.

Tobalina.—Population, 548.

Vito.—Population, 258.

PROVINCE OF LA UNIÓN.

Situated to the north of Manila, it is bounded on the north by the Province of Ilocos Sur, on the east by those of Abra and Lepanto, on the south by Pangasinán, and on the west by the China Sea. It is 52 miles long by 17½ wide. The area is 741 square miles, and the population 119,421, distributed among 13 pueblos, 278 visitas, and 45 rancherías of subdued

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infieles. Much rice, maize, tobacco, sugar cane, etc., is grown, and gold is gathered in the river sands, but it is of poor quality.

The capital is **San Fernando,** with a population of 12,892. It is situated 171 miles from Manila, with which it comunicates by wagon road, and from thence to Loasang by a pike which traverses the provinces of Pangasinán, Pampanga, and Bulacán. It was the residence of the governor and of a number of public functionaries. There is a post office and telegraph station.

CITIES AND TOWNS.

Agoo.—Population, 10,150; situated 19 miles from San Fernando.

Aringay.—Population, 3,044; situated 14 miles from San Fernando. It has a telegraph station.

Bagnotan.—Population, 6,555; situated 9 miles from San Fernando.

Balauang.—Population, 12,242; situated 22 miles from San Fernando.

Bangar.—Population, 9,000; situated 24 miles from San Fernando.

Bauang.—Population, 7,701; situated 6 miles from San Fernando.

Gaba.—Population, 4,164; situated 12 miles from San Fernando.

Naguilian.—Population, 10,405; situated 11 miles from San Fernando.

Namacpacan.—Population, 8,630; situated 19 miles from San Fernando. It has the following outlying towns: Cabalito, Oaqui, Cantoria, and Puerto de Darigayos.

Rosario.—Population, 2,246; situated 29 miles from San Fernando.

San Juan.—Population, 10,211; situated 5 miles from San Fernando.

Santo Tomas.—Population, 6,481; situated 26 miles from San Fernando. It has highroads to the neighboring towns.

PROVINCE OF ZAMBALES.

Situated in the southern part of the island of Luzon, it is bounded on the north by the Gulf of Lingayen and the Province of Pangasinan; on the east by the Provinces of Tarlac, Pampanga, and Bataan; on the south by Bataan, and on the

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west by the China Sea. The area is 1,647 square miles, and the population 87,641, distributed among 23 pueblos, 70 barrios, and 7 rancherías of subdued infieles. The mountains of this province are covered with timber forests, which are inhabited by various tribes of fierce savages and abound in game. Products of the mountains are wax and honey, while in the remainder of the territory cane, indigo, vegetables, cacao, and rice are grown.

The capital is **Iba,** with a population of 3,512. It is situated 122 miles from Manila, has a good casa real, casa de la comunidad, courthouse, church, meeting hall, and parish house, and was the residence of the mayor and judge and a number of functionaries. It has a post office and telegraph station.

CITIES AND TOWNS.

Agno.—Population, 5,002; situated 75 miles from Iba.

Alaminos.—Population, 8,008; situated 82 miles from Iba. It has a telegraph station.

Alos.—Population, 894; situated 64 miles from Iba. It has a highroad to Balincaguing and Alaminos.

Anda.—Population, 3,761; situated 94 miles from Iba, on the island of Cabarroyan. It has highroads to Alaminos and Bolinceo.

Balincaguing.—Population, 2,378; situated 52 miles from Iba. It has highroads in good condition.

Bani.—Population, 4,295; situated 60 miles from Iba.

Bolinao (ch. 3, p. 41).—Population, 4,075; situated 103 miles from Iba. The municipal district is formed of 13 islands. There is a meteorologic and semaphoric station, a submarine cable, and a dockyard for coast vessels.

Botolan.—Population, 4,566; situated 4 miles from Iba.

Cabangan.—Population, 2,798; situated 7 miles from Iba.

Candelaria.—Population, 2,865; situated 22 miles from Iba.

Castillejos.—Population, 3,357; situated 33 miles from Iba.

Dasol.—Population, 2,404; situated 49 miles from Iba.

Infanta.—Population, 3,445; situated 44 miles from Iba.

Masinloc.—Population, 2,945; situated 19 miles from Iba. There are highroads to Candelaria and Palauig.

Palauig.—Population, 2,584; situated 13 miles from Iba.

San Antonio.—Population, 4,988; situated 22 miles from Iba. There are highroads to San Narciso, San Marcelino, and San Miguel.

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San Felipe.—Population, 4,265; situated 19 miles from Iba.

San Isidro.—Population, 2,863; situated 38 miles from Iba.

San Marcelino.—Population, 4,043; situated 29 miles from Iba.

San Narciso.—Population, 7,255; situated 23 miles from Iba. There are three highroads—one to San Antonio, one to San Felipe, and one to San Marcelino.

Santa Cruz.—Population, 4,594; situated 38 miles from Iba.

Sarapsap.—Population, 7,142; situated 82 miles from Iba.

Subic.—Population, 3,016; situated 38 miles from Iba.

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No. 12.

DINAGAT I.

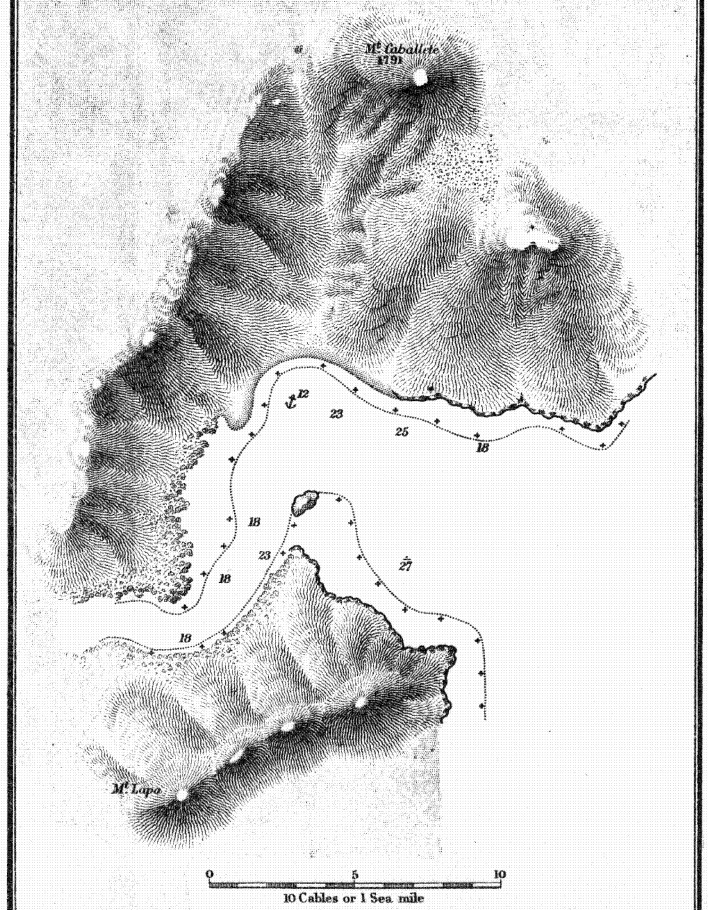
PORT GABÓ

Surveyed under the direction of

CAPTAIN CLAUDIO MONTERO *Spanish Navy*

1864

Mt. Caballete. Lat. 9° 53'. 5" N. Long. 125° 43'. 20" E. (*Approx.*)



ISLAND OF MINDANAO.

By decree of July 30, 1860, the territorial division of this island was definitely established, and a civico-military government, under the denomination of Mindanao and adjacent islands, was created. It is divided into 8 districts. The island is situated between Visayas on the north and Borneo on the south; it is bounded on the east by the Pacific Ocean, and on the west by the island of Paragua, the Strait of Balabac, and Borneo. The area is 16,595 square miles, and the population 611,300, of which 211,000 are Christians and the rest Mohammedans and Pagans. It is very extensive and irregular in form, possessing high and extended mountain chains which have not been entirely explored, and which are grown over with very rich woods. It is inhabited almost throughout the interior by savages. Its rivers, some of great volume, empty into the sea, as follows: On the north coast and Butuan Bay, the Jabonga and Butuan; on the Macajalar coast, the Cagayan; in Eligan Bay, the Malanao and others of minor importance; in the cove of Dapitan, the Palaven; and on the rest of the coast mentioned creeks and rivers of regular volume abound, as well as on the remaining coasts, except the Rio Grande de Mindanao (ch. 11, p. 116), which empties to the east of the great Bay of Illana.

ITINERARY OF COAST OF MINDANAO—NORTHEAST COAST.

From the east point of Bilambilam Bay the coast trends almost SE. by E. for 30 miles, forming a slight indentation, to Point Tugus; the shore is covered by mangroves and strewn with rocks.

The Ginatuan Islands extend to about 9 miles from the coast in a northeasterly direction, leaving a deep channel 2½ miles wide between them and the south coast of Dinagat (ch. 12, p. 141). Ginatuan Island, the largest of the group, is 3 miles long, NW. and SE., and has a small islet off its northern point; both island and islet are clean and steep-to; Bayalnan (Bayatuan), the next island to the southeast, is 3½ miles long, NW. and SE.; a reef on its northern end extends 1 mile to the NE.,

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inclosing several rocks under water. The channel between Ginatuan and Bayalnan is 1½ miles wide; but some islets on the southern end reduce the available passage to a width of 4 cables. This channel is practicable for steamers, but the passage between the western islands of the group and the coast of Mindanao are not practicable. Kabsugan, the southernmost island, is 4½ miles long, NW. and SE., and is united to the coast.

Nagubat Islets are two rocks, clean and steep-to, lying 7 miles south of the summit of Ginatuan Island.

Kabgan Island lies 2½ miles south of Nagubat Islets, and 1 mile from the coast of Mindanao. A group of four rocks lies 2½ miles SE. of Kabagan.

Nangaba Islands, close to Tagonito Point, form a chain of eight islets extending 4½ miles WNW. and ESE. The southern islet, Amagadpagat, lies nearly in the middle of the channel between the coast and the south point of Bukas Island (ch. 45, p. 254).

Tugus Point is a narrow tongue of land stretching 2 miles to the NE. The channel between it and Bukas Island is 4½ miles wide, and has a depth of 41 fathoms in the middle. The land in the vicinity is commanded by Mount Legaspi, 3,889 feet high, at the northern end of the great range that runs parallel to the east coast of Mindanao.

Ballena (Whale) Rock, 6¾ miles east of Tugus Point, when seen from the northward, appears like two rocks; it is 5 yards in extent and 5 feet above water; a reef extends ½ mile SW. of the rock.

General Island is the largest and highest of a group consisting of three islands and several rocks lying off Kapunuipugan Point, 5 miles SE. of Point Tugus. It is separated from the point by a deep and narrow channel, and is surrounded by a reef which shows several rocks above water, and includes Triton Rocks and Anki Islet, 2 miles to the SE. There is anchorage SW. of the island near the shore in 17 fathoms, mud. Unamao, 2 miles south of the General, is united to the coast by a reef; between the two islands is an isolated rocky shoal.

Kantilan Reef, before the river and town of the same name, 5 miles south of Point Kapunuipugan, extends 2 miles from the shore; the end of the reef is in line with Unamao Islet and Point Kapunuipugan.

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Kauit Point, 20 miles SE. by E. of Tugus Point, is clean and steep-to to the northward and westward, but bordered to the eastward by a reef that reaches out for 1½ miles to seaward, and continues along the coast to the southward for 10 miles. The open bay between the General Islands and Kauit Point has not been sounded, but it appears to be clean and deep.

Tides.—The ebb stream from Surigao Strait is said to follow round Kauit Point to the southward.

BUKAS ISLANDS are three islands so close together as almost to form one island, but they are separated by narrow openings in the reefs that surround them. The southern island, or Great Bukas, is irregular in outline, about 12 miles long, north and south, and traversed throughout its length by a range of hills. Its coast on all sides, except the northeastern, where it is joined to the middle island, is clean. A shoal of white coral lies east by north of the north point of this island. There are soundings of 11 to 18 fathoms about 1 mile from the southwest coast, in the channel between the island and Tugus Point.

The middle Bukas island is 3 miles across from north to south, and 2 miles from east to west, and is surrounded by a coral reef. A conical hill, 984 feet high, rises on the southeast part. The eastern island is 3 miles long, east and west, and 1½ miles wide, north and south, and is surrounded by a reef which projects 2 miles to the SE., and incloses the islet Kasulian; the reef is steep-to and shows several rocky heads above water.

Sibonga Port (ch. 45, p. 254), on the south side of the middle island at the foot of the conical hill, is divided into two narrow arms by an islet united to the south point of the island by a reef that borders the shore. The depth of water in the western arm is 9 to 18 fathoms, sand and rock; in the eastern arm it is 4½ to 9 fathoms. This latter arm communicates with Port Castilla, on the north side of the island, by a channel 15 yards wide and 5 feet deep, which forms the separation between the middle and eastern island.

Port Castilla, between the reefs on the north sides of the middle and eastern Bukas islands, is open to the northward by a narrow passage between the reefs; it is a little oval-shaped port of 6 cables greatest diameter and 3 cables across, with 8 fathoms depth.

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Reef.—A narrow reef extending 8 miles NE. and SW., which dries in places, lies 3 miles SE. of the eastern Bukas island. The northern extremity of it is separated from the southeast reef of Siargáo Island by a passage 1½ miles wide, and the southern extremity is separated from the east coast of the southern Bukas by a passage 2 miles wide. These passages, as also that between the reef and Kasulian Islet, are safe and deep.

Lajanosa and Anajauan islands are two islands lying south of Siargáo Island and east of the southern Bukas island. They are two miles apart, and surrounded by reefs; some rocks lie 1½ miles south of Lajanosa. The passage between Lajanosa and the reef SE. of Siargáo is 4 miles wide and 18 to 23 fathoms deep.

SIARGÁO ISLAND is irregular in outline, 19 miles long, north and south, with 12 miles greatest width at the southern part, and is traversed throughout its length by a chain of mountains. The northern and northwestern coast is surrounded by an extensive reef to a distance of 3 miles from the shore, and from the southeast part of the island another reef projects to a distance of 4 miles, inclosing the islets Guiang (Guinjang) and Dako. On the coasts there are a few towns and little ports entered by channels through the reefs. On the western coast, between ports Sapao and Kakut, there is a group of low islands on a reef, and several rocks show at various points on the edge of the reef.

Port Pilar, on the east coast of Siargáo, is a small circular port of 6 cables diameter, steep-sided, with a large rock on the southern side united to the coast by a reef; the anchorage is west of this rock in 8 to 14 fathoms.

Dapa Channel, between Siargáo and Bukas Island, is safe and deep; its least width, between the island off Point Kambasak, the south point of Siargáo, and the north coast of East Bukas, is 1 cable; the reefs on both sides are distinctly visible.

Kiko and Barrabas shoals lie in the middle of the western entrance. The first is 1 cable and the other 1½ cables in diameter; they are steep-to and can be passed on either side. The reef off the north point of Great Bukas Island has already been mentioned.

Dapa Reef extends to 1½ miles east by south from Kambasak Point. On the reef and close to the point there is an island

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6 cables long; an opening in the reef, 3 to 5½ fathoms deep, leads to the anchorage at Dapa. A detached bank surrounded by deep water lies 2½ cables east of Dapa Reef.

Dapa Anchorage is in a narrow channel between the northern edge of Dapa Reef and the shore reef of Siargáo; it has a depth of 3½ fathoms before the town of Dapa. Neither pilots nor supplies are obtainable. The inlet NW. of Dapa is obstructed by reefs, and only fit for boat navigation.

Port Kakub, on the southwest coast of Siargáo, is only ½ cable wide at the entrance and 3½ to 12 fathoms deep. There is anchorage before the entrance in 7 fathoms. The coast between Dapa Inlet and Kakub is a mass of rock, dry at low water.

Port Sapao, on the northwest coast, is formed by an opening in the reef and is of no importance.

Jalian Island, 5½ miles N. 60° E. of Port Ǵabó (ch. 12, p. 141) in Dinagat Island, is surrounded by a reef which extends 2 miles to the ENE.; the eastern edge of this reef is 2½ miles distant from the western edge of the northwestern reef of Siargáo.

Tides.—In Port Kakub there are two high tides and two low tides in each lunar day. The height of the tide is affected by diurnal inequality, which varies with the moon's declination. In the summer the day tide is the highest and in the winter the night tide. It is high water, full and change, at 6h. 22m. The greatest range is 7 feet and the least is 5 feet.

Tidal streams.—In Surigáo Strait the flood tide sets to the west, and the ebb to the east; the latter, following round Point Kauit, then runs to the southward.

The velocity of the stream in the strait reaches 6 knots at springs. There is a difference of about two hours between the time of high water at Surigáo and in Surigáo Strait. Fishermen roughly estimate that when the moon rises the ebb tide commences to run in Surigáo Strait. From January to June there is but one high water during the twenty-four hours in Surigáo Strait, which occurs during the night. From July to December the same phenomenon takes place, but the time of high water is by day.

From observations made by the Spanish surveyors, it appears that the highest tide on the west coasts of the islands of the strait takes place at the same hour as the lowest tide on the east coasts. This phenomenon is especially marked at

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the little island Kabsugan, SE. of Ginatuan, the inhabitants of which live by shell-fishing, and when the banks of the east coast begin to cover they pass to the west coast, where the tide begins to fall, and continue their fishing.

Eddies.—Between points Surigáo and Bilaa a countercurrent prevails, contrary to the tidal stream in the strait, and between the coast of Mindanao and the islands Dinagat and Siargáo a number of eddies prevail in different directions. The pilots of the locality avail themselves of these eddies in navigation.

Winds in Surigáo Strait.—At the mouth of the strait the northeast monsoon commences toward the end of September, and blows throughout October and November; in December northeast winds alternate with northerly gales. In January winds blow from NE. and ENE., accompanied by heavy rain. In February and March easterly winds prevail. In April, May, and June the prevailing wind is southeast, with occasional gales called "collas" from the south. In July, August, and September collas from SW. are frequent.

The northeast winds, though strong, cease during the night; but winds from the SE., S., and SW. continue to blow. It generally rains with north-northeast and east-northeast winds; the rain ceases and the weather clears with east winds, and more so with southeast winds. With southwest winds it remains clear unless a gale arises which sometimes brings rain.

In general there is no very bad weather in this part of the archipelago, except when a typhoon occurs. The season of the year when typhoons mostly occur is from the end of October to the beginning of January, principally at springs and at the quarterings of the moon, it is said. They begin to blow from NW., and finish from the SE., having passed through NE. or SW.; when they veer through NE. they blow stronger, and more rain falls.

According to Maqueda, in the year 1775 three typhoons occurred in Surigáo Strait, and two in 1781, at the crescent and full moon. None have been observed since that time, whilst in the mouth of San Bernardino Strait and on the coast of Luzon several very severe typhoons have been recorded.

Directions for the Eastern Passage.—The eastern passage between the northeast coast of Mindanao and the islands of Dinagat and Siargáo is difficult, and should not be taken by

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a sailing vessel unless she has the wind and tide in her favor. A pilot should be employed, and the route taken should be as follows: Having made Bilaa Point a vessel can either pass outside the 2¾-fathoms shoal north of the point or between it and the point, and she should keep in mid-channel between Basol Island and the coast of Mindanao. When 1 mile south of Basol, she should steer S. 70° E. to pass 1 mile from the rocks that surround Rasa Islet off the south point of Nonok; then steering ENE. she should pass between Ginatuan Island and Port Gabo, rather approaching the Dinagat shore, which is steep-to, and she will be less exposed to the tidal streams and eddies, which are very violent in this passage. Ginatuan Island should be rounded at a safe distance, and when 1 mile east of the eastern point of the island a course S. 38° E. should be steered for the middle of the channel between Bukas Island and Mindanao, leaving Amadgadpagat Islet 1 mile to starboard; having passed through the channel she can steer east into the Pacific.

A steamer can pass between Ginatuan and Bayalnan islands, taking care to avoid the reef off the north point of the last-named island, and leaving to starboard the islet which lies ½ mile south of the southwest point of Ginatuan. A course S. 49° E. will then lead to the middle of the channel between Bukas and Mindanao.

Butuan Bay.—The southern shore of this bay, between the river Butuan, which enters the eastern angle, and the town of Nasipit, 13 miles to the westward, is low, covered by mangroves, and bordered by shoal water to a very short distance from it. From Nasipit to Point Diuata, 8 miles to the NNW., the shore is fringed by a reef which extends out ½ mile.

Butuan River is one of the most important of Mindanao; it is supposed to take its rise not far north of Davao Bay, on the southern coast; one of its arms near the mouth communicates with a lake that lies about 14 miles NNE. of the town of Butuan.

The two points that form the entrance to the river may be recognized by the forts constructed on them. From the north point a great bank of sand extends more than 1½ miles to the westward, and dries at low water.

An island with trees upon it, about 40 feet high, divides the mouth of the river into two channels. The navigable channel shifts according to the freshets, carrying from 2 to 2½ fathoms

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at high-water spring tides; the current is very strong, and during the rainy season frequently brings down trunks of trees. A pilot is necessary for entering the river, there being no marks to denote the channel.

Tides.—Only one high water generally occurs during the twenty-four hours, and this by day or night, according to the season.

Butuan town is situated on the right bank of the river Butuan, about 18 miles from the mouth, and contains some 2,000 inhabitants, chiefly engaged in working a gold mine in the vicinity. The anchorage is frequented by traders from Port Misamis, and from Cebú, and Mr. Looney remarks that he carried from 3 to 5 fathoms of water between the bar of the river and the town. The water of the river at Butuan is fresh and used for drinking.

Supplies of cattle, pigs, poultry, rice, and sago are obtainable.

The town of Butuan is celebrated in history as being the place where Magellan landed after his anchorage near Limasana Island, and where he celebrated the first mass in the Philippines.

Coast.—Diuata Point is low, sandy, and surrounded by a reef which commences about Nasipit, extends out ½ mile from the point, and continues round it to the southward.

Sipaka Point can easily be recognized by a conical hill of good height, thinly wooded, and by a watchtower on it; the shore is clean, steep-to, with soundings of 55 fathoms close to. In the bay on the east side of the point there is anchorage in 2¾ and 3½ fathoms, sand and mud, before the mouth of two rivers; the shores of the bay are low and covered by mangroves. Anchorage may also be had on the west side of the point in 2¾ fathoms, under the shelter of Kanauagor Islet.

Bagakai Point is not very high, and is surrounded by a reef of 2 cables extent, with 5 fathoms near it. The coast between points Sipaka and Bagakai is formed by sandy beaches alternate with rocky bluffs and mangrove shores.

Camiguin Island (ch. 13, p. 148), lying 5½ miles to the north of Point Bagakai in Mindanao, is about 12 miles long, NE. and SW., and more than 8 miles wide, east and west; it is extremely mountainous and steep, rising to a central mountain of 5,338 feet above the sea, visible 60 miles off. On the northwest part, 2½ miles east of the town and anchorage of

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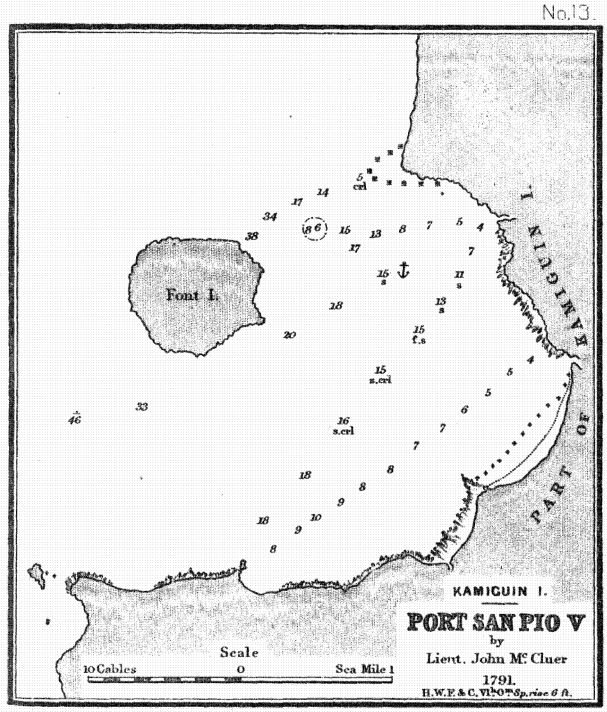
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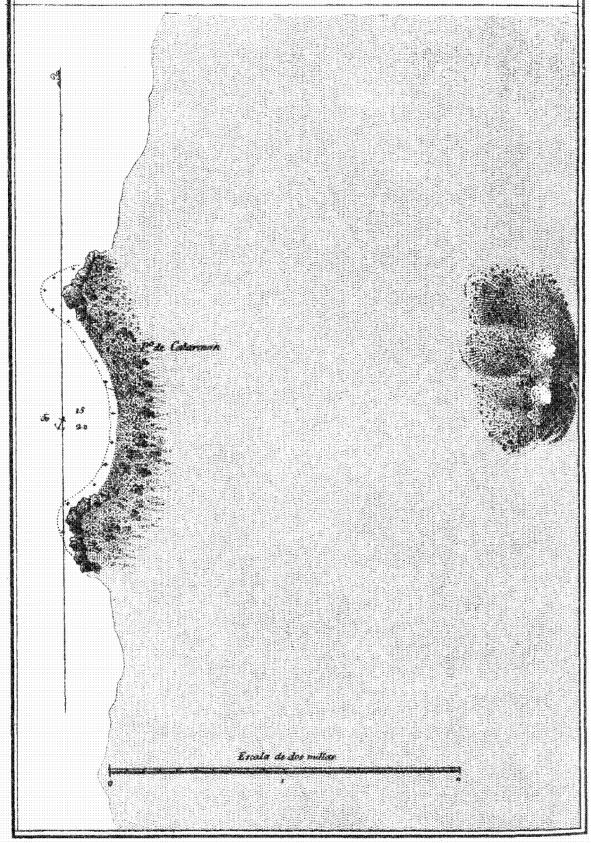
FONDEADERO DE CATARMAN.

(Isla Camiguin.)



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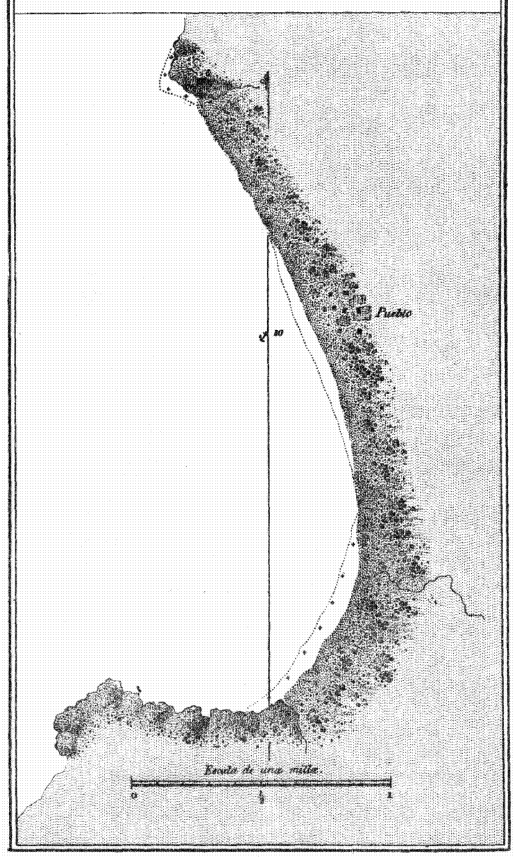
FONDEADERO DE BALINGASAC.



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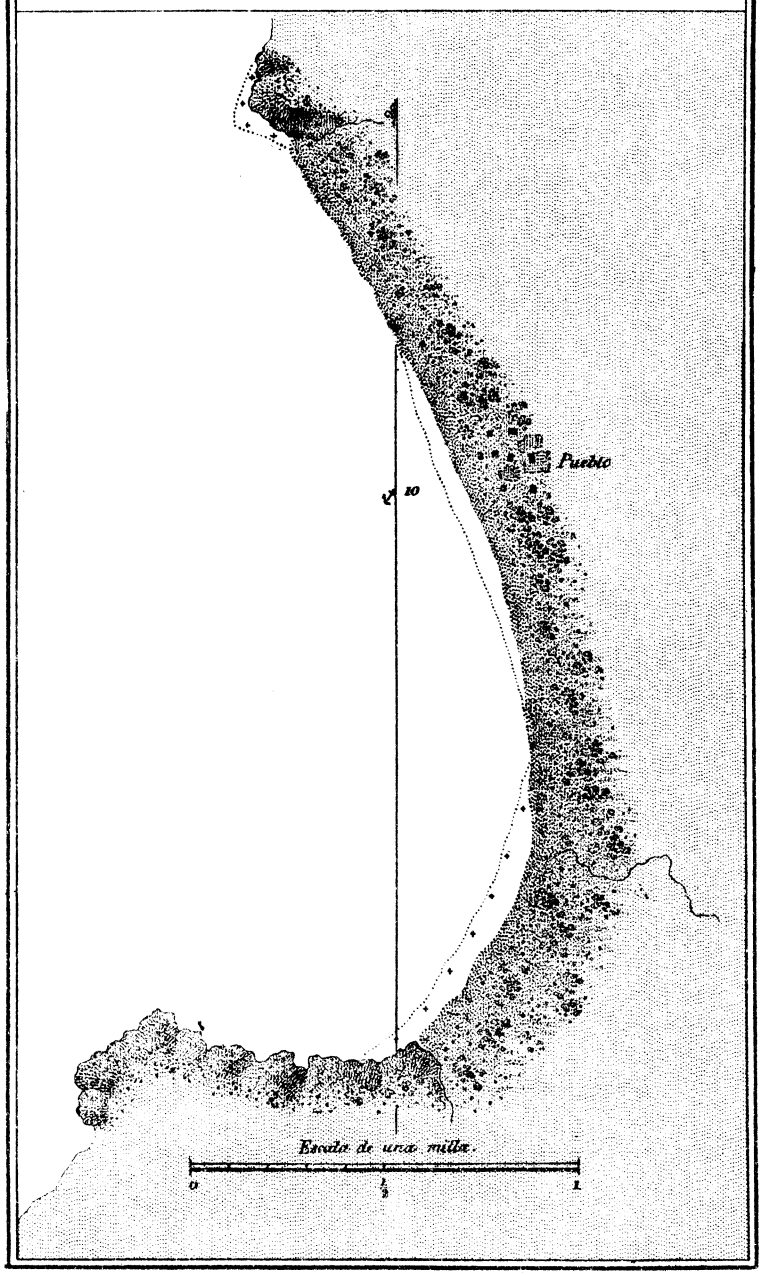

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Catarman (ch. 14, p. 149) rises a double peak 4,797 feet high. The island produces rice, good tobacco, wax, and cacao in abundance.

Both Agajo and Manbajao points have reefs off them; the sand cay above mentioned lies ¾ of a mile NW. of the town of Agajo; it is about 3 cables in extent and 6 feet above the sea at high water, springs, and has bushes on it. A rocky shoal ¾ of a mile long lies east 2½ miles from Point Manbajao.

From Point Manbajao the coast is rocky as far as Maginok, a town of 4,111 inhabitants, off which there is anchorage in 9 fathoms, sand. The eastern point of the island has some sand patches off it. The town of Sagai lies NE. 2 miles from the point, off which there is anchorage in 5½ fathoms.

On the west side of the island there is anchorage off Catarman (ch. 14, p. 149), between two low points, and also in a nook to the southward of the point which forms the limit of Catarman Bay. The mount Two Peaks, east of Catarman, serves as a guide to it.

Bantiki Islet, which lies nearly 4 miles off the east coast of Camiguin, is surrounded by rocks extending ½ mile off it, except on the southern side of it, which can be approached and where anchorage may be had in 2¾ fathoms, sand.

Tides.—The flood stream entering through Surigáo Strait passes to the SW. on both sides of Camiguin Island with great force, but loses its strength as it enters Makajalar Bay.

NORTH COAST.

Point Gorda.—From Point Bagakai the coast trends to the southward, forming a slight inflection with four towns on it. At a distance of 16½ miles is Point Gorda, which is steep with a flat crown, wooded, and steep-to. Balingasac Bay (ch. 15, p. 149), between Point Gorda to the south and Point Banbayan to the north, is 2½ miles wide and 1 mile deep to the SE. The anchorage is in front of the town, at 2 cables from the shore, in 9 fathoms, sand and rock.

Dangers.—Constancia Rock, west of Point Banbayan, has not been examined, and its position is not well known. The channel between it and the point is clear.

Alutaya Shoal, bearing SW. 2½ miles from Point Gorda, is of oval form, with a greatest diameter of 1 mile; at low water the center uncovers, leaving dry a bank of sand and rocks.

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In the channel between it and the coast there is a depth of over 40 fathoms.

MAKAJALAR BAY is an extensive bay, open to the NW. between Point Gorda and Point Sulauang. The eastern coast of the bay is steeper and higher than the western, and is formed of sandy beaches separated by a low, level headland. The western shore is clear and steep, but from Point Malujan a reef extends out 7 cables. The center of the bay is deep, but it has not been sounded.

Hassaan, south of Gorda, is a town of 5,000 inhabitants; in the elbow north of the town, called Kabulig Bay, there is anchorage well sheltered in both monsoons, but close to the shore in 13 fathoms, muddy sand.

Cagayan River, which enters it at the head of the bay, has only 1 fathom on the bar at low water; but the depth and direction are constantly changing with the freshets of the rainy season. The river pours out a considerable quantity of water with a velocity of 2 knots at ordinary times. The town of Cagayan lies 6 miles up the river, and small vessels ascend to it. A fair amount of trade is carried on, and gold is found by washing in the mountains.

Anchorage.—At ½ mile to the NE. of the mouth of the river, there is a small bank of sand covered by 3 to 11 fathoms water, where anchorage may be had sheltered from all winds except those from north to west. Vessels can also anchor near Point Vantay in 22 fathoms.

Opol (Opot) Bay (ch. 16, p. 150) is 5 miles to the west of the mouth of Cagayan River; there is anchorage in front of the town in 12 fathoms, near a sand bank. A steep reef fringes the coast to 1 cable distance near Opol, and extends out 7 cables to the north from Point Malugan.

Alubijit Anchorage (ch. 17, p. 150) is 7 miles NW. of Opol, and south of Point Sulauang, where the coast forms an elbow fringed by a reef to 2½ cables distance. The anchorage is NE. of the town, in 17 fathoms, to the north of some houses on the beach.

Point Sulauang is of uniform height, covered by mangroves; rocky ledges stretch out to nearly a mile from it, surrounded by deep water.

ILIGAN BAY.—Between Point Panaon to the east, and Point Bombon (ch. 7, p. 67) to the west, is a great arm of the sea, about 32 miles across and 20 miles deep, open to the north; its shores are in general safe and steep-to.

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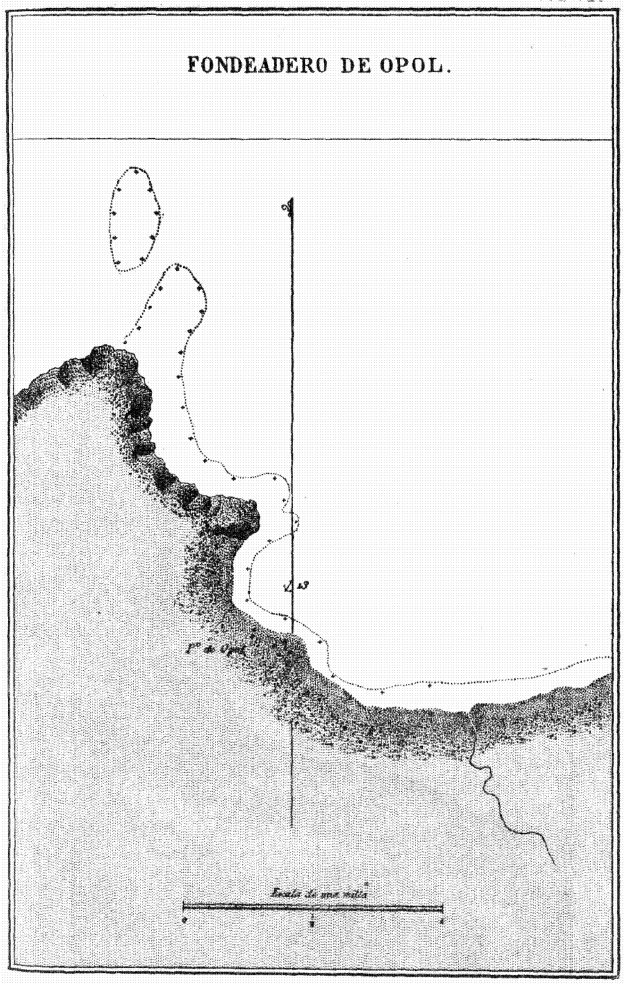
No. 16.

FONDEADERO DE OPOL.



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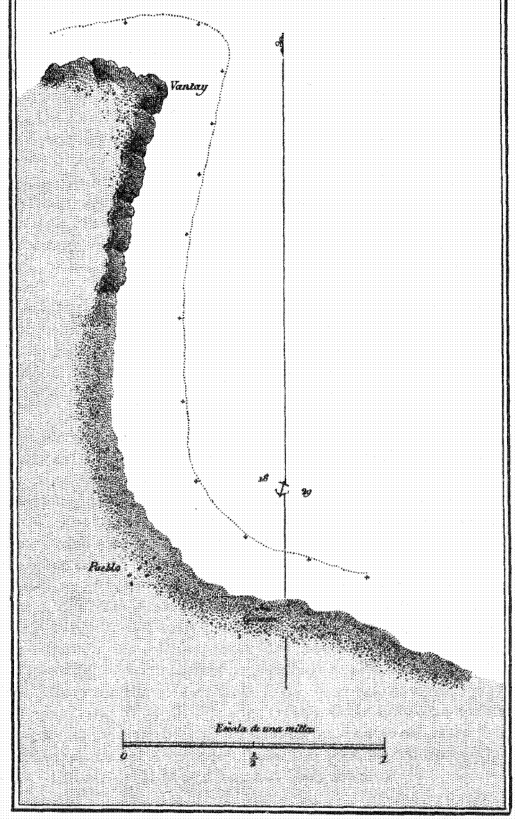
No. 17.

FONDEADERO DE ALUBIGIT.



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POINT MAPUTI.—The coast from Point Sulauang curves round to the SW. for 14 miles to Point Maputi, which is broad and rugged. On the north side of the point there is a little bay, Initao, in which small craft can find anchorage in 2¾ fathoms, in front of the town.

Kinalong Roads offer anchorage in 14 fathoms, sheltered from the eastward, but very close to the shore. Iligan River, situated in the southeast angle of the Iligan Bay, is of some importance, and communicates with a lake distant 23 miles from the mouth; the bar is deep, but there are reefs at the entrance. The town of Iligan is on the left bank of the river in a fertile plain.

Point Binuni is low, clean, and steep-to. The bight of the coast between it and Iligan River is bordered by sand beaches with some rocks, and receives the waters of several rivers. Anchorage may be had in 7 fathoms close to the shore, which is steep. The shore to the westward as far as Point Binuni is clean.

PANGUIL BAY.—This is the name given in the Derrotero to the inlet in the southwest angle of Iligan Bay included between points Binuni and Tabú, which forms the entrance to Port Misamis. The western shore of the inlet is formed by the slopes of Mount Malindang and the lesser hills SSE. of it. On the south side of Port Misamis are three hills, the highest of which is 2,312 feet high.

PORT MISAMIS is formed by a channel 10 miles long and 1 to 2 miles wide, ending in a shallow circular basin 5 miles in diameter. The sides of the port are low and covered by mangroves; but to the northward of the town of Misamis there is an extended sandy shore, and to the southward there is a line of higher coast.

Eastern shore.—Point Binuni is round, covered by mangroves, and has some rocks off it; from this point the shore trends WSW. for 4 miles, low and covered by mangroves, to Point Lianga, near which there are patches of sand covered by 3½ and 5½ fathoms, affording anchorage sheltered from the SW. Narvaez Bank is a small patch of coral, covered by 1¾ fathoms, lying W. ¾ N. 1½ miles from a little house on Point Lianga. A reef with 2¾ to 6 fathoms on its western edge lies in mid-channel at 7½ cables from the western shore of the point; the rest of this reef has not been sounded.

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Western shore.—Point Tabú is low and sandy, with shoal water off it. From this point a reef of coral 8 cables wide fringes the shore to the southward nearly as far as Lokulau, where two little rivers discharge. Anchorage may be had east of the fort of Lokulau in 6½ fathoms; to the north and south of this bearing the bottom is strewn with large rocks. From Lokulau to Misamis the shore is low and sandy, with mangroves in places, and shoal water in the vicinity.

Lokulau Shoals are two banks of sand and rock on which large trunks of trees may often be seen stranded by currents. The longest of the two is oval in form, 9 cables in diameter, and is separated from the coast by a channel of about 4 cables width, with 3½ to 9 fathoms depth. The eastern edge of the banks, near which there are 18 fathoms, bears N. 48° E. of Port Misamis. South of Misamis the channel is clean and steep, with a depth of 4½ to 7 fathoms, sand, throughout its length to the entrance of the inner basin, where the depth increases to 9 fathoms and then falls again to ½ fathom at the bottom of the bay; several small rivers enter the bay here between the mangroves.

Anchorage.—The anchorage of Misamis is on the western shore between the point of the fort and Point Pulut, a mile to the SW. It is completely sheltered from the sea and all winds, and vessels can lie along the shore and put a plank on shore in front of the town in 4½ fathoms, sand.

The town of Misamis is divided into the old and new towns, 220 yards apart, joined by a bridge.

Directions.—To enter the port of Misamis from a position 2 miles abreast of Point Tabú, a vessel should steer south until the fort of Misamis bears S. 58° W., when a course S. 55° W. will lead in mid-channel between Lokulau and Narvaez Shoals, in 5½ and 6½ fathoms, to pass near the fort, and thence to the anchorage west of it.

Coast.—Diualan Point is low, covered by mangroves, very clean, and bordered by a sand beach. Between points Tabú and Diualan a reef of sand and rocks extends to a mile off shore, and dries in places at low water.

Point Layaban is low and sandy, with depths of 7 and 8 fathoms, sand, at a short distance.

Point Polo, 7 miles NNW. of Layaban Point, is of dark rock, clean and steep-to, with trees on it reaching to the water's

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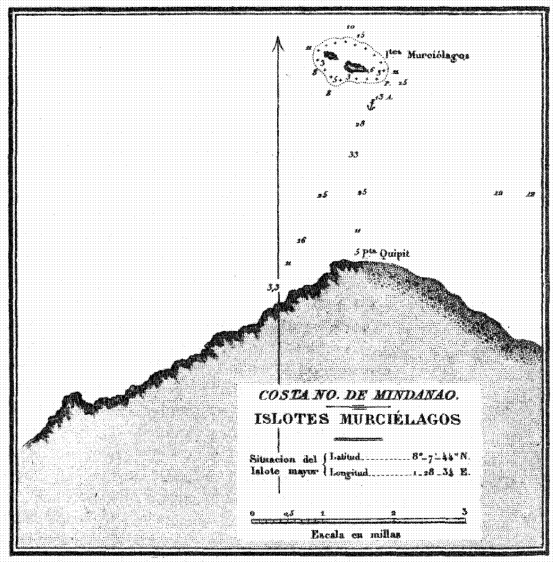
No.18.



Ites Murciélagos
5 pta Quipit
COSTA NO. DE MINDANAO.
ISLOTES MURCIÉLAGOS
Situacion del Islote mayor
Latitud 8°-7'-44" N.
Longitud 1-28-34 E.
0 0,5 1 2 3
Escala en millas

edge. The coast between the two points is bordered by mangroves, and south of Point Polo near the shore there are two islets surrounded by a reef which extends outward 1 mile.

Point Bombon, 6 miles from Point Polo, is low, clean, and steep-to; an intermediate point forms with Point Polo a little bay into which flows the River Tabukan, and where anchorage may be had sheltered from westerly and southerly winds.

Murciélagos Bay, between Point Bombon (ch. 7, p. 67) and Point Silla, is surrounded by a reef which extends to a mile from the sandy shore; on the west coast, south of Point Silla, there are three islets within the reef, named Murciélagos (ch. 18, p. 153). Point Bombon also has three rocky islets joined to its northwest side, and the reef projects at this part to 1¼ miles toward the middle of the bay. There is anchorage in 5½ fathoms, mud, near the river which enters the eastern angle of the bay; everywhere else in the bay there is no bottom with 45 fathoms.

Point Silla is of considerable height, and remarkable, as it takes the shape of a saddle; rocks surround it at not more than a cable's distance.

Point Tagolo is not very high, and is surrounded by a narrow reef; but at 1 cable's distance from it no bottom was found with 36 fathoms. A patch of cogonal on it is visible 20 miles off. Between points Silla and Tagolo there is an intermediate point, Baloi, which is high, rocky, and very rugged, its peaks showing most fantastic outlines. The shore from Silla to this point is low and covered with mangroves, with rocks off it; but from the point to Tagolo it is high and steep.

Tides.—The tidal streams are very strong off this part of the coast. The flood makes to the east, and the ebb to the west.

Silino Island, which lies N. by E. ½ E. 7½ miles from Point Tagolo, is about 1½ miles in extent, and low, flat, and wooded, with sandy shores bordered by reefs that do not project far.

Alikai Island, lying W. ½ N. 8 miles from Point Tagolo, is more than 2 miles long from east to west, and 1 mile wide; it is also low, flat, and wooded, with sandy shores, and bordered by reefs of no great extent.

Dapitan Bay, contained between Point Tagolo to the north and Point Sikayak to the south, is sheltered from all winds but westerly ones. The depth at the entrance is 17 fathoms

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and 4½ fathoms at the anchorage before the town. The little port of Talaguilong is in the northern part of the bay.

The northern coast of the bay is high; Point Tubud (Tugod), at 1½ miles south of Point Tagolo, is remarkable for having over it a remarkable, isolated, conical hill covered by cogan; a reef which uncovers at low water lies west 3 cables of the point, and the shore between it and Point Tagolo is foul.

Light.—On Point Tubud a fixed red light is exhibited, raised 43 feet above the sea, and visible in clear weather from a distance of 11 miles through an arc of 213½° between the bearings S. and N. 33½° W. The light-house, 23 feet high, is of iron, painted white.

Port Talaguilong is nearly circular in form, 7 cables in diameter, completely shut in, and very convenient for vessels of all sizes; the depth of water is from 5½ to 8 fathoms, mud; a narrow steep reef lines the shores; the entrance passage is 1½ cables wide between the reefs, and 9 fathoms deep.

Dapitan River and Town.—The bar of the river has very little water on it at low water; lanchas can enter at high water. The town is on the left bank of the river, near the shore; it exports good cacao, wax, and maize; cattle are to be had in abundance.

NORTHWEST COAST.

Point Sikayak is surrounded by a reef which extends to 3 cables from the point and fringes the shore to the northeastward as far as Point Botogan.

A great bay, clear and with good anchorage, stretches between Point Sikayak and Point Blanca. Three rivers, their mouths defended by forts, enter the bay. The land behind is mountainous.

Point Blanca, one of the most remarkable features of the coast, is a perpendicular cliff of white stone 26 feet high; it forms a horizontal table covered by grass, with no trees upon it. During the rainy season, a rivulet of good water falls from this table-land. The vicinity of the point is shoal; at 2 cables from it there are 1½ fathoms. Anchorage may be had eastward of the point in 4½ fathoms, and also in the bay between Point Blanca and Point Dauit.

Point Dauit is clear and steep-to, and can be recognized by a little hill that takes the form of an obelisk.

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Point Tabonan is high, rocky, and very steep, with a flat summit; there is anchorage in the bay which this point forms with Point Dauit.

Point Dauigan is also high and steep with a flat top; on its southwest side there is a narrow reef with 9 fathoms near it. Anchorage may be had in the southern angle of the bay between points Dauigan and Tabonan in 11 fathoms; the other parts of the bay are foul.

SINDANGAN BAY.—The shores of this bay are exceedingly steep; anchorage may be had south of Point Dauigan in 3 fathoms, and also east of Point Sandingan in 11 fathoms, very close to the shore; everywhere else the bay is too deep near the shore for anchorage.

Point Sandingan is a steep, rocky bluff, bordered by a narrow shoal of rocks and sand, with breakers at a distance of 1 cable.

KIPIT or GALERA POINT is low, flat, and sandy, with shoal water off it; the bay to the eastward, into which the river Kipit flows, is shoal, with 6 fathoms at the distance of a mile from the coast; the surrounding land is low.

The Murciélagos Islands (ch. 18, p. 153), which lie north 2½ miles from Point Kipit, are situated on an oval reef about a mile in length from WNW. to ESE., with soundings of 4½ to 8 fathoms around its edge. The islands are low, and the largest—the easternmost—is 3 cables in length. Anchorage may be had SE. of the island in 7 fathoms, sand. The channel between the islands and Point Kipit is clear and safe, with a depth of 18 fathoms in the middle of it.

Coast.—To the westward of Point Kipit the coast is low and bordered by sand beaches separated by rocky headlands, and cut into by several little rivers. Anchorage may be had at 1 mile from the shore in 7 fathoms, fine sand. The wood on the coast is that named agojos, a tree similar to the pine of Europe. High mountains can be seen inland, and also hills covered with cogonal.

Gorda Head and Point Coronada are both high and steep, but Gorda Head, which lies 5 miles NE. of Point Coronada, is much the highest, and is liable, on coming from the southward, to be mistaken for the western extremity of the land.

Currents.—Between the islands Panaon and Kamiguin there is a constant current to the west. South of Bohol the currents follow the direction of the prevailing monsoon.

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Near the coasts and within the great bays the current is influenced by the discharge from the rivers.

WEST COAST.

From Point Coronada the coast is clean and steep-to as far as Point Balangonan, which lies 15 miles SW. by S. Coronada Bay, south of the point of the same name, is sheltered from all winds but those of SW., and offers anchorage in 9 to 13 fathoms, sandy bottom. In the angle to the northward, where a little river enters, the depth is 2¾ to 4 fathoms.

Balangonan Point is composed of dark ferruginous rock, low and very steep-to. The little bay to the east of it is more sheltered than that of Coronada, but its shores are very steep, so that to get 10 fathoms it is necessary to go very close inshore. At a mile to the northward of the north point of this bay there is a small islet, clean and steep.

Port Santa Maria.—This well-sheltered little port is situated immediately to the southward of Balangonan Point. It is about a mile deep to the SW. and contains two little basins of 13 fathoms depth, very convenient for vessels of good size. The entrance is 2 cables wide and 36 fathoms deep. In the middle of the port the depth is 15 fathoms, and little less near the shore. A narrow reef lines the coast and extends to the distance of 1 cable from the entrance points of the western basin. The shores are low and covered by forests of good trees; among them teak is to be found. Water can be obtained from a little river in the eastern end of the port.

Point Balanguin (Dulanguin), to the SW. of the port, is rocky and of no great height; steep-to. It resembles Point Balangonan, and coming from the southward may be taken for it. At 3 cables from the coast, between this point and Port Santa Maria, there are four detached rocks, clean.

Sikogon Bay, between points Balanguin and Sikogon, is clean, deep, and bordered by a beach of white sand where two rivers discharge; some rocks lie near the shore in the middle of the bay. The depth at 2 cables from the shore is 4½ to 5½ fathoms, sand.

Sikogon Point is rocky, clean, and steep-to. In the northeast angle of Panabutan Bay (ch. 19, p. 156), to the south of the point, there is anchorage in 7 to 22 fathoms, sand, between two rocky points. The rivers Sikogon and Siraguai are shallow. The natives are numerous in this place; they grow

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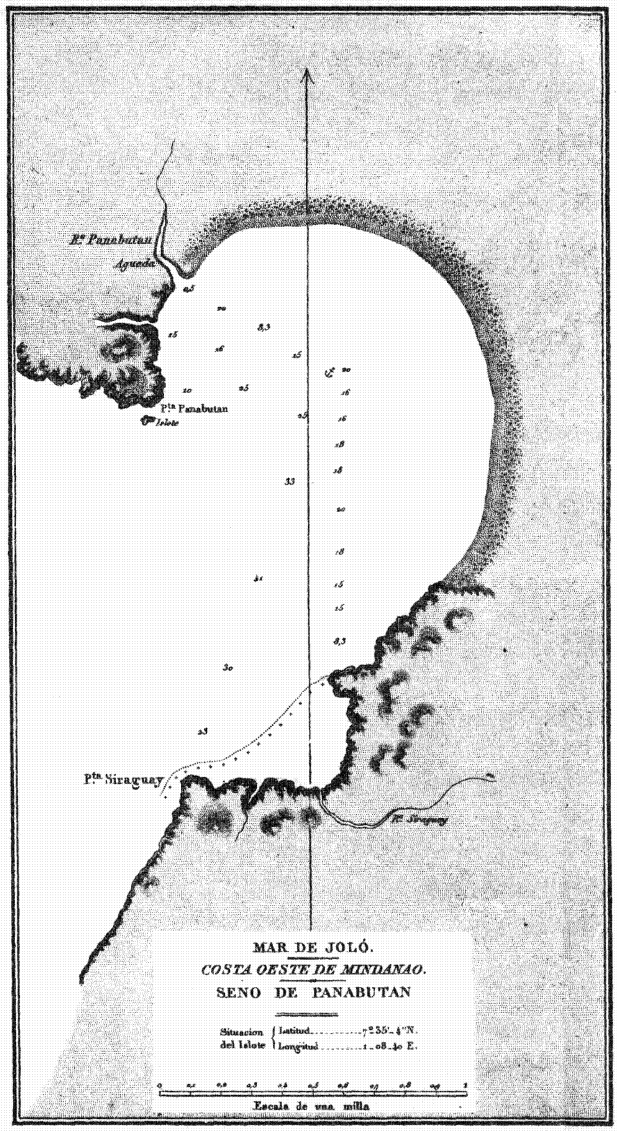

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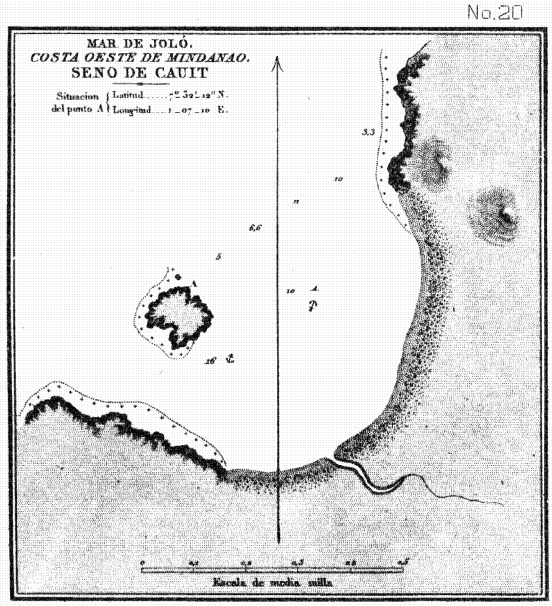
MAR DE JOLÓ.
COSTA OESTE DE MINDANAO.
SENO DE CAUIT
Situacion del punto A
Latitud.....7° 32' 12" N.
Longitud.....1 _ 07 _ 10 E.
3,3
10
n
6,6
5
10
A
16
Escala de media milla

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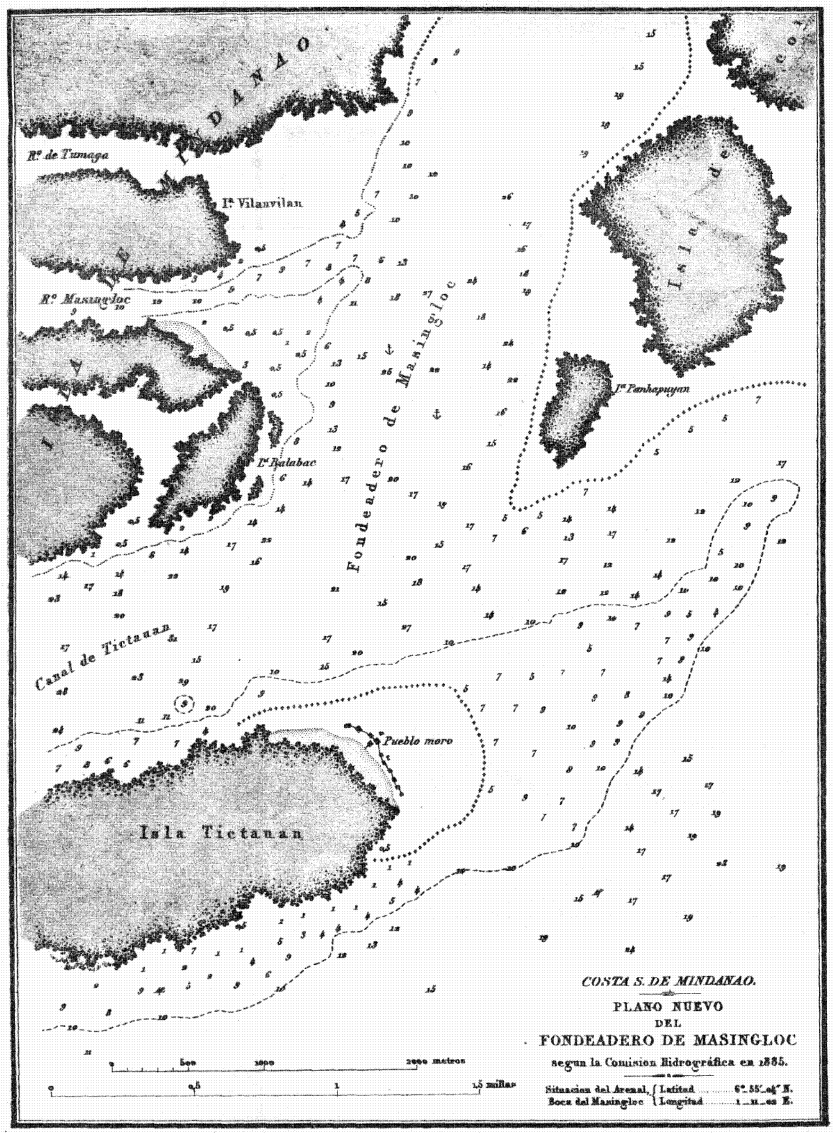
No. 21.



Rº de Tumaga
Iª Vilanvilan
Rº Masingloc
Iª Balabac
Fondeadero de Masingloc
Isla de
Iª Panhapuyan
Canal de Tictauan
Pueblo moro
Isla Tictauan
COSTA S. DE MINDANAO.
PLANO NUEVO
DEL
FONDEADERO DE MASINGLOC
segun la Comision Hidrográfica en 1885.
Situacion del Arenal, Boca del Masingloc
Latitud 6° 55' 04" N.
Longitud 1 11 02 E.
0 500 1000 2000 metros
0 0,5 1 1,5 millas

maize and tobacco, and carry on trade with the Sulu Islands. Wood and water can be obtained.

Cauit Bay (ch. 20 and 21, p. 157) is semicircular, of a diameter of 9 cables, with sandy shores and small, steep reefs on both sides of the entrance. Near the south shore there is an islet of 1 cable extent, clean and steep on the eastern side, with a narrow reef on the western side. In the bay there is good anchorage in 4½ to 9 fathoms, sand, under shelter of the islet.

Point Cauit is high and steep; the sea face is composed of red earth; the summit is rounded and covered with wood.

Coast.—From Point Cauit to Point Batu-Tandok, which lies 9 miles S. by W. ½ W., the coast is clear and steep, and forms little bays between the intermediate points Piakan and Nanga, which points are high, rugged, and steep. This part of the coast, like all the west coast of Mindanao, presents an agreeable aspect of hills, covered with verdure, and cultivated land, with a great number of houses.

Point Batu-Tandok is high, clean, and steep, with a flat summit; at 130 yards from it is a small, pointed rock, from which the point appears to take its name—Horn Rock; between this point and Point Nanga there is anchorage near the shore in 2¾ to 8 fathoms.

Sibuko Bay, which lies between Point Batu-Tandok and Point Buril, 4 miles to the southward, penetrates 2 miles to the eastward and is very safe, with steep shores, bordered by a long beach of sand, with a little river at each end of it, where boats can enter and obtain water, even at low tide. The depth in the bay is not less than 27 fathoms, except very close to the beach, where 11 fathoms can be obtained. The anchorage is good, but a sea sets in with westerly winds. The town of Sibuko is 2 miles inland. The people are peaceful, and the land cultivated. Provisions are procurable.

Coast.—To the southward of Sibuko Bay the coast is high, clean, and steep, and bordered by sand beaches, interrupted by rocky cliffs, as far as Point Batulampan, the western point of Mindanao. From Point Batulampan to Samboangan it is low, covered with trees, and bordered by steep sand beaches, with a depth of 14 fathoms at a cable's distance. Coasters going from Samboangan, when the wind and tide are against them, land their crews and thrack their vessels to Point Caldera.

Point Batulampan is of even height and steep, with a flat crown; Point Alimpaya, about a mile to the northward of it,

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is flat and sandy; points Dumalon and Caldera are sand beaches. All these points, as also the rounded coast they define, are clean and steep-to.

The tidal streams, which at springs reach a velocity of 5 knots, strike Point Caldera with great force.

SOUTH COAST.

(Ch. 22, p. 158.)

SIBUGUEI BAY.—From the northeast entrance of the Sakol Channel the coast of Mindanao trends NNE. for 53 miles, and then, curving round to the southward for 30 miles, forms the extensive bay of Sibuguei, terminated to the SE. by Oluntanga Island. The coasts of this bay are bordered by islands and reefs, and have not yet been properly surveyed; navigation in it should therefore be conducted with caution.

Panubigan Islands consist of 15 small islands and several little islets situated near the coast of Mindanao. They are wooded, and for the most part clean and steep-to. The northernmost of the group, Palma Brava, is surrounded by a reef which projects ¼ of a mile to the NE. and almost joins the coast. Between this island and the reef off Point Koroan there is a small anchorage of 7 fathoms depth. There is also anchorage in 5 fathoms in the two little bays south of Panubigan Islands.

Coast.—From the Panubigan Islands the coast runs NNE. for about 14 miles to Point Vitali, which is fronted by four islets, clean and steep-to, and several rocks which extend out for 3 miles from the point; they are named Tigbaon Islands.

Port Banga (ch. 22, p. 158), situated 6 miles to the northward of the Tigbaon Islands, is safe and well sheltered; it is 2½ miles long, NE. and SW., with a maximum width of 1 mile. An islet, with a reef extending 3 cables to the south, divides the entrance into two deep passages 1½ cables wide. In the eastern channel the depth is 13 fathoms, lessening gradually to 1½ fathoms inside the port; the sides are steep-to. The best anchorage is in 9 fathoms, half-way between the eastern point of entrance and an island to the north. The reef off the east point of entrance extends 1¼ miles to the eastward, and 2¼ cables to the SW.

The coast then trends NNE. ½ E. for 21 miles, forming several bays edged by islets and reefs, with soundings of 14 and 36 fathoms at 2 miles from the shore, as far as 2 miles

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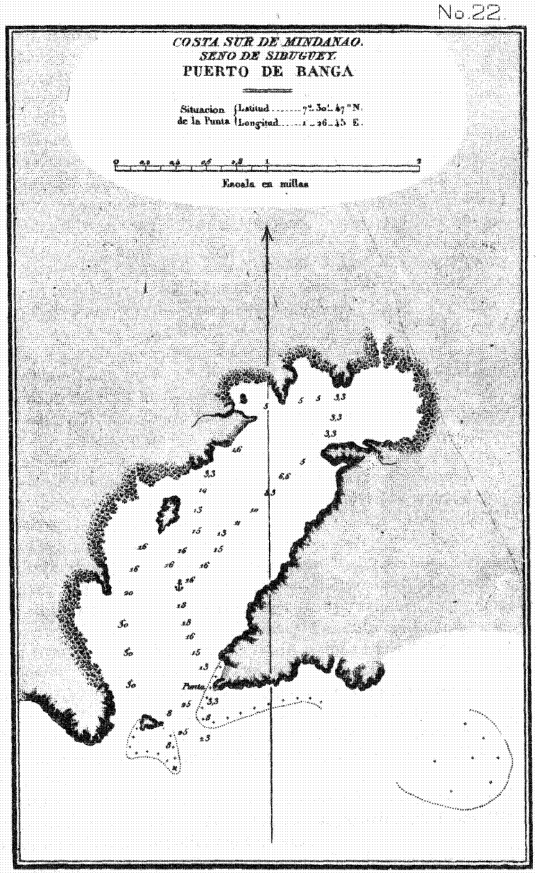

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north of Buluan Island, which is small and surrounded by rocks. From this position there is a line of soundings of from 12 to 23 fathoms across the head of the bay to Kabut Island; northward of this line there are said to be shoal banks.

The village of Marasingan, near which layers of coal have been found, lies 4 miles inland to the SE. of Kabut Island.

The east coast of Sibuguei Bay, from Kabut Island to the narrow channel separating Oluntanga from the mainland, is bordered by a reef of small extent, with detached shoals steep-to off it.

Pandalusan Island, 5 miles off the coast, is of moderate height and surrounded by a narrow sand beach, steep-to. A rocky shoal of 1 mile extent lies 4½ miles N. by E. of Pandalusan, and at 4 miles ENE. of this shoal there are two more smaller shoals, near the coast. Between Pandalusan and the first shoal, and between these and the other two shoals, there are soundings of 11 fathoms.

Danger line.—The chart indicates by a line of points the edge of a dangerous reef starting from the two shoals above mentioned, and surrounding Olutanga. To avoid this reef, the island Pandalusan should not be brought to bear to the westward of N. ½ E. until 7 miles to the north of that island, when an east course may be steered, passing to the north of the shoals, which form the limit of the reef.

Circe Bank, discovered by the French sloop of war *Circe* in 1864, was reported to consist of sand and coral, of ½ cable's length, with 4 fathoms water over it, 6½ fathoms around it, and 27 fathoms at 1 cable's distance; Pandalusan Island bearing from it N. 17° E., and the south point of Olutanga Island S. 86° E. In the Spanish Derrotero it is stated to be 1 mile in length, NNW. and SSE., to have only 1¾ fathoms water over it, and to be situated with Pandalusan Island bearing N. 1° E., the easternmost islet of the Tigbaon group N. 67° W., and the south point of Olutanga Island S. 82° E., distant 9½ miles.

Olutanga Island is very low, covered by mangroves, and surrounded by reefs. The channel separating it from the mainland is only practicable for boats.

Tantanang Bay.—The entrance to this bay is open to the southeast, and is 2 miles wide between the reefs that project from the coast of Olutanga and from the north point of

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entrance; and there is 6 to 8 fathoms depth between the islands Letayen and Sibulan. In the middle of the mouth there are two shoals of 3½ and 2¾ fathoms. In the center of the bay there are some shoals of white sand awash at low water; between them and the western shore the bay is well sheltered, and has a depth of 13 fathoms, lessening gradually to the northward; a river enters on the western side.

Tumalung Bay, on the north side of Olutanga, has a good depth of water, and is well sheltered in all weathers. There is anchorage in 9 fathoms west of Point Simangul, the northern extremity of Olutanga; an islet, fringed on the northward by a reef of 4 cables extent, lies near this point, and a little to the NNE. of the point there is a bank of sand.

Dumankilas Bay affords good shelter and holding ground among the islands and bays that it incloses; the general depth is 8 to 16 fathoms, with 5 fathoms near the shore. The coast of Lapirauan is foul, but on the edge of the reef that borders it there are 8 fathoms; anchorage can only be had at a long distance from this coast.

Acha Rock, a small circular patch of sand and coral, steep-to, and covered by 2¾ fathoms, least water, lies in the entrance of the bay, 6½ miles west of Point Dumankilas (ch. 23, p. 160).

The islands Muda, Dakula, and Paya are clean and steep-to, with channels of 9 fathoms depth between them. To the west of Paya there is a rock. Piratas Rock lies 1 mile east of Dakula Island; it is steep-to and uncovers at very low tides.

Cherif Islands are three small islets, clean and steep-to, dividing the channel into two passages.

Dayana Island is also clean; to the WNW. of it lie the point and village of Silupa, with anchorage south of the point in 4 fathoms, with room to swing, near the shore; to the southward the coast is bordered by reefs and shoals, and a great reef extends ENE. of the point.

Danger.—A shoal, covered by 1½ fathoms, lies between Dayana Island and Point Igat; from it the western Cherif island is in line with the highest part of Dakula; and Putili Island on with the second hill of Point Dayana.

Fatimo Islands are clean and steep-to on the south side; but on the north side the bank which fills the head of the bay nearly dries at low water. The entrance to Kumalarang Creek, practicable for light craft at high water, lies N. by E. of Fatimo Islands.

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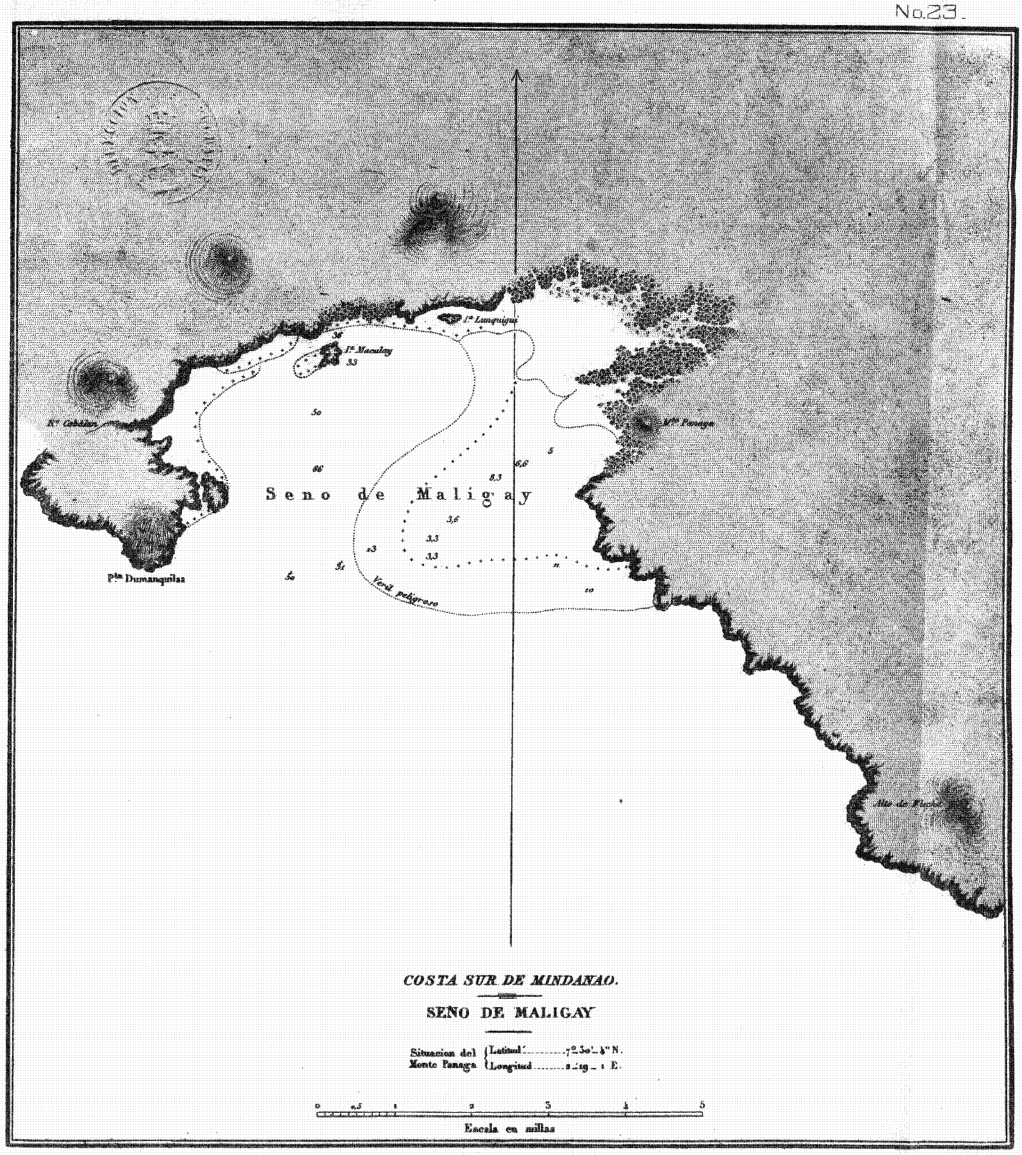
No. 23.



COSTA SUR DE MINDANAO.

SEÑO DE MALIGAY

Situacion del Monte Panaga { Latitud ..... 7°.30'.4" N. / Longitud ..... 2°.19'.1 E.

0 0,5 1 2 3 4 5

Escala en millas

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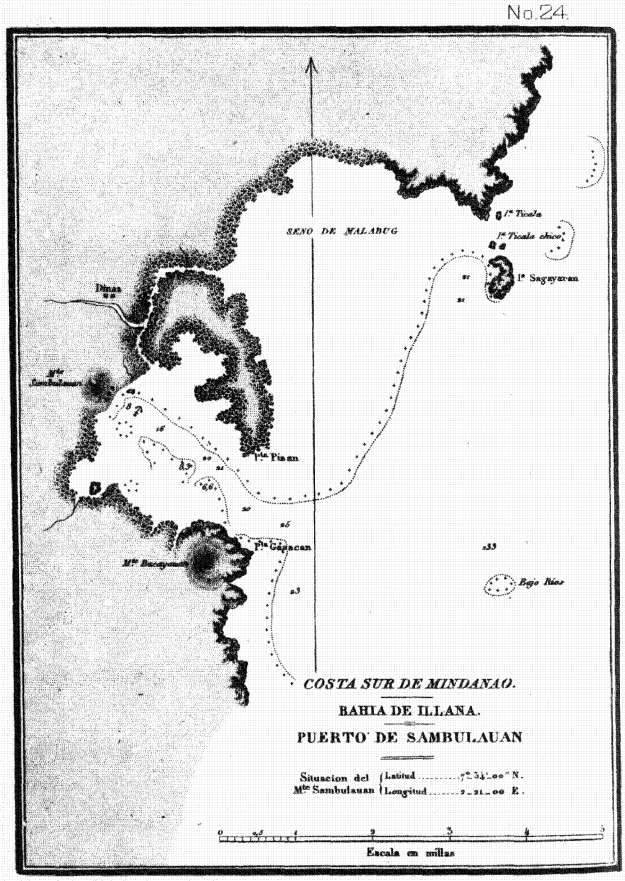
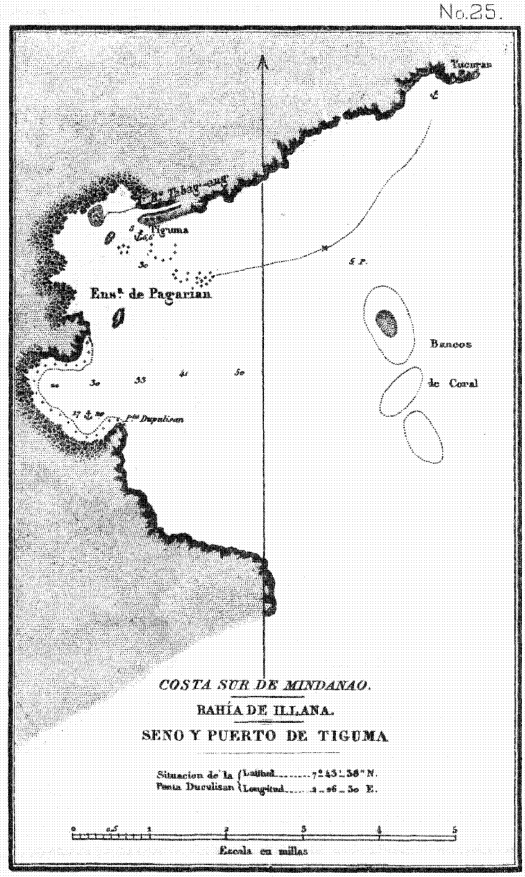
No. 24.


SENO DE MALABUG
Ia Ticala
Ia Ticala chico
Ia Sagayaran
Dinas
Mte Sambulauan
Pta Pisan
Pta Gapacan
Mte Bacayauan
Bajo Rios
COSTA SUR DE MINDANAO.
BAHIA DE ILLANA.
PUERTO DE SAMBULAUAN
Situacion del Mte Sambulauan
Latitud ..... 7° 34' 00" N.
Longitud ..... 2 21 00 E.
0 0,5 1 2 3 4 5
Escala en millas

Hosted by Google

No. 25.



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Igat Bay, to the north of Igat Island, is well sheltered and safe. The shores of the bay are clean and steep-to, except to the NE., where there is a shoal which projects 1½ miles to the SW. The river Dumankilas enters here by several mouths; the locality is unhealthy. Putili Islet, in the middle of the entrance, is steep-to. Igat Island is separated from the mainland by a narrow channel, near the eastern part of which there is a good watering place. Off the western end of Igat Island there is a narrow reef.

Danger.—In the middle of the bay south of Igat Island there is a shoal of white sand which uncovers at low water springs.

Coast.—From Point Karabuka to Point Dumankilas (ch. 23, p. 160) the coast is clean and steep-to except north of Triton Island, which is a large rock surrounded by a narrow reef.

MALIGAY BAY (ch. 23, p. 160) is bordered on the eastern side by a reef over which there is 3½ to 1¾ fathoms water, which reduces its available space by one-half; in this half the depth is 37 to 27 fathoms, and it is deep close to the edge of the reef. The village of Banganga is situated in this bay.

Banganian (Flecha) Peninsula is traversed throughout its length by a range of hills, the highest of which, Alto de Flecha, can be seen 24 miles in clear weather. The west coast of the peninsula is clean and steep-to; the east coast is bordered by a reef and should not be approached within a mile.

Panikian Island is low; a shoal, covered by 7 fathoms, extends 1 mile SSE. of the island and is very steep on its eastern side, no bottom having been obtained with 84 fathoms close to it. The channel between the islet and the coast is safe.

Anchorage.—During the northeast monsoon vessels can anchor in the middle of the bay south of Alto de Flecha in 5½ to 9 fathoms; water can be had at a rivulet about 1½ miles east of the anchorage. There is also anchorage in the same depth off Point Flecha, but when the monsoon blows fresh a heavy sea sets round the point.

ILLANA BAY (ch. 24 and 25, p. 161) is comprised between Point Flecha and Point Tapian, distant 40 miles. It is separated from Iligan Bay on the north side of Mindanao by an isthmus 13 miles wide.

Rios Rock (Takut Masila), before the little port of Dinas, is a circular rock of ½ mile diameter. From its center Mount Bakayuan bears W. ½ N., distant 4½ miles. Takut Parido, a rock

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smaller than Takut Masila, is said to exist outside that rock.

Port Dinas is of little importance; it is formed by an opening in the reef that borders the coast south of Point Pisan (ch. 24, p. 161); this reef is said to extend as far as Point Dupulisan, and the coast here should be approached with caution. The entrance to Port Pisan is only 2 cables wide, and it should not be entered without a pilot except at low water, with the sun and weather favorable for seeing the reefs. There is 11 to 13 fathoms water in the passage, and the anchorage is in 4½ to 5½ fathoms near the shore. The direction of the passage is with Mount Sambulauan bearing N. 50° W.

The town of Pisan lies a little to the north of the anchorage, 2 miles from the mouth of the river of the same name. The country is marshy and unhealthy; during the rainy season the water rises to 5 feet above the surface of the soil.

There is also anchorage in a corner of the reef west of Sagayaran, one of the Tikala Islands, in 9 fathoms.

Pagadian Bay, in the NW. of Illana Bay (ch. 24, p. 161), includes the anchorages of Dupulisan and Tiguma (ch. 25, p. 161). Before the entrance there are some coral banks, one of which is always uncovered, with passages between them and the shore to the northward and southward. The southern passage is preferable, being wider and more direct.

Point Dupulisan is bordered to the SSE. and to the west by a reef of 3 cables extent. There is anchorage west of the point in about 9 fathoms, sheltered from south and southeast winds.

Point Tiguma is fronted by a reef which extends along the coast to the ENE. The anchorage is near the coast in 3½ fathoms.

Coast.—From Tiguma, as far as Palak Harbor, the coast is bordered in many places by a reef which extends to 1 or 2 miles from the shore; it contains many little bays affording anchorage; generally very near the shore. Several rivers and lagoons open into the bay, the shores of which are lined with villages. The native inhabitants, with the exception of those of Tiguma, are in general hostile to strangers, and it is prudent to take precautions while dealing with them, without doing so ostensibly.

Pinatayan Bank consists of two reefs, parallel to each other, extending 4 cables in a SSE. and NNW. direction; it is 1 cable wide, with a depth of 11 to 22 feet on it. From the eastern part of the bank the north point of Bongo Island bears S. ½ W., and Point Matimus of Tetian E. by S. ¼ S.

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PALAK HARBOR, between Point Panga to the north and Point Mariga-batu (Red Rock) to the south, 4 miles distant, is open to the westward, and protected from the winds of that quarter by Bongo Island before the entrance. The harbor is of good depth and safe. On the north side it contains the bays of Kidamak and Segut, and on the south side a wider bay in which are the anchorages of Palak and Parang Parang.

A steep coral reef fringes the coast; on the north side it is very close to the shore; on the south side it extends to 2 to 3 cables from it; and south of Segut Bay it projects about 1½ miles to the SW. The depth at the entrance is over 40 fathoms; within, it ranges from 25 to 15 fathoms; and alongside the fringing reef about 5½ fathoms. The entrance presents no difficulties; a small detached hill at the bottom of Parang. Bay serves as a good mark.

Palak town, deriving its name from the Moro word "palak" (separated), is situated on the island Palak, which forms the northern point of the bay, and is separated from the mainland by a narrow channel, Sampinitan, with only 1½ feet of water in it at low water. The town was the residence of the naval commandant.

Anchorage.—Large vessels should anchor SE. of the buoy at the end of the reef which projects eastward of the mole, in 16 fathoms. Small craft can anchor at the entrance of the Sampinitan Creek in 9 fathoms; in that position they should moor in order to keep a clear anchor. The reef near the settlement is marked by beacons.

Parang Parang River can be entered by boats with difficulty; the water in it is good and abundant; a Moro town is on the north bank.

Segut Bay is half filled by a reef; a village lies on the west coast.

Kidamak Bay contains a small native population; the eastern point has a small reef off it; there is anchorage on the eastern side of the bay in 8 fathoms.

Winds.—In Palak Harbor, during the first months of the year, when the wind is well established from the NE., there are often squalls in the afternoon from the north, accompanied with much lightning, wind, and rain; before the squall begins the wind blows from NW and W., and after it is over the land breeze sets in until 9 in the morning. During the southwest monsoon the wind freshens after midday, and varies

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from SW. to W. and NW.; rain falls in abundance, and heavy thunderstorms occur.

Tides.—There are always two tides in the bay, with rare exceptions, which take place in the quarter of the equinoxes when the moon is at her greatest declination. The mean "establishment" is 6h. 5m.; springs rise 8 feet, neaps 4½ feet.

Tidal streams.—The stream turns at high and low water at Palak Harbor, and at all the ports on the coast between Zamboanga and Palak. On the coast, with the rising tide, the stream sets to the north, northwest, and west, according to local configuration. At Palak Harbor, with the rising tide, the stream sets to the east on the north shore, and follows the bend of the coast to the southward and westward; the ebb stream sets in the reverse direction.

Bongo Island, at the entrance of Palak Harbor, is about 5 miles long, NNE. and SSW., by 1½ miles wide; it is some 300 feet high, and thickly wooded. The island is surrounded by a reef, which projects as much as 2 miles WNW. of the north point of the island, while on the eastern side the reef is narrow and very steep-to; there is no good anchorage off the island. The channel between Bongo Island and Panga Point is 4½ miles wide, and 30 to 40 fathoms deep.

Volcanoes.—The cordillera of Sugut (Bangaya) lies about 23 miles to the eastward of Palak Harbor; the highest mountain of the range is the volcano of Makaturin, the latest eruption of which occurred in 1872. This eruption was followed by an earthquake which partly destroyed Palak, Kota-batú, and the village on the banks of the river Mindanao.

MINDANAO RIVER (ch. 11, p. 116).—This great river disembogues 5 miles to the south of Palak Harbor by two wide arms, on the northernmost of which is the town of Kota-batú, about 5½ miles from the mouth. The river is navigable for 60 miles by vessels of 3½ feet draught; it flows through a beautiful valley 30 miles in width, which scarcely shows any change of level; the valley is capable of producing tobacco, cacao, sugar, maize, and cotton; but this is only known at present by specimens produced. The course of the river lies SE. for 45 miles from its mouth to the lake Ligauasan, out of which it is seen to flow; from the other side of the lake the direction of the river is NNE. to its source in the Sugut Mountains. At 21 miles from the northern mouth the river divides into two arms, which enter the sea 4½ miles apart,

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and between them form a great delta. These branches communicate with each other by four small channels. The northern arm is the widest, deepest, and most navigable; the southern one is narrow, and has only 5 feet of water. The river banks are peopled by Moros.

Entrance.—Point Panalisan (ch. 11, p. 116), the northern point of entrance, is surrounded by a shoal extending half a mile to the westward. The entrance channel, which is south of this shoal, is 16 feet deep, and very narrow. Off the south entrance point a sand spit extends 2 cables to the NW., and is steep-to. The bar, which is in front of Painan village, has 5 feet over it at low water. After passing the village the depth increases, and 16 to 20 feet can be carried as far up as Kota-batú.

A bank, covered by 2¾ fathoms, with 9 to 16 fathoms near its outer edge, extends SW. from the northern entrance to a distance of 1½ miles from the coast, and joins the shore again near the wooded hill of Timako.

The southern entrance of the river is divided into two arms by an islet which cannot be passed on the south side; the northern arm has only 5 feet of water in it; at 3 cables to the west of this entrance the depth is 14 fathoms.

Beacons.—A red beacon or buoy marks the extremity of the north sand bank of the entrance; a white beacon or buoy marks the extremity of the south sand bank of the entrance.

A white and red beacon or buoy marks the head of the shoal between the islets.

A great tripod and white cage stands on Bulusan Point, and serves to distinguish the mouth of the river from other entrances on the coast.

Kota-batú town (Stone-fort) is now the capital of the island, and was the residence of the Governor-General of Mindanao; it is connected with Palak harbor by a causeway of stone. The river is 16 feet deep off the town, and vessels can anchor in it, taking precautions to avoid the snags carried down by the current. Steamers call fortnightly.

Coast marks.—Timako Island, between the two mouths of the river, is wooded to the water's edge. The hill upon it, Mount Timako, is a good mark for marking the river. An elevated range of volcanic mountains, dominated by the central peak Dikalungan, extends some 70 miles to the southward, nearly parallel to the river Mindanao. The peak

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Kabalala, on which is a cogonal, 3½ miles from the southern entrance of the river, and higher than the neighboring hills, is another good mark for the river.

Coast.—From the south entrance of the river Mindanao the coast trends about SW. for 23 miles to Kidipil Point, the most salient point of this part, and is clean and steep-to. Point Tapian, midway, is low and surrounded by a reef reaching out 3 cables. From Kidipil to Tinaka Point, the southern extremity of Mindanao, the coast is generally clean and steep-to, with good depths off it, and includes several little bays; it, however, has not been surveyed, and should therefore be approached with caution.

Linao Bay is 1½ miles wide, and sheltered from all winds but those from the southwest. Its shores are bordered by a narrow, steep reef.

Huidobro Shoal, called Linao Shoal by the Moros, is placed on the chart 3 miles WSW. of Point Linao; it is said to be covered by 5½ fathoms of water.

Port Lebak, between points Lebak and Nara, offers good shelter in all weathers, but a sea sets in with westerly winds. The shores are covered by mangroves and bordered by a reef which extends to about 1 cable from them. The best anchorage is in 11 to 13 fathoms to the eastward of the islet and reef Tubotubo, in the southern part of the bay. Water can be obtained in the river Lebak, east of the anchorage, and also from the other rivers in the port. The natives are said to be in the habit of using poisoned arrows on the smallest pretext; it is therefore well to be careful, and not to trust them too far.

Basiauang Bay affords two anchorages; that to the northward of the bay and east of Point Basiauang, affords good shelter in all weathers, but it is necessary to secure to the shore, as there is not sufficient room for a vessel to swing. The southern anchorage is at the mouth of a small creek on the northern side of a remarkable hill, connected with the mainland only by a low mangrove-covered neck. The anchorage can be dropped in 10 to 13 fathoms, and the stern secured to the reef. The reef at the point, and the neighboring island of Donauang break the sea, and these anchorages of Basiauang, after Port Lebak, are the best shelters which this coast offers in all weather.

The island Donauang has a reef which reaches 2 cables out to the NNW. The passage between Donauang and the coast

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is safe; a vessel should keep nearer to the island reef than that off the coast, which is more extensive.

Donauang Shoals are two shoals situated respectively 3 miles N. 9° W. and 2 miles N. 3° W. of the north of the island; they are each about ½ mile across and covered by 3¾ least water.

Tuna Bay is semicircular, steep-sided, and bordered by a reef like all the bays of this coast. There is anchorage in 15 fathoms in the northwest part, before coming to a point covered by mangroves from which a reef projects; a small anchor should be laid out on the reef, as is well to be done in all these bays with steep sides.

Danger.—A reef which uncovers in places and is covered by 5 fathoms in other places, lies 2 miles off the coast and 5 miles SE. of Point Malatuna. Vessels should not approach this part of the coast within 6 miles.

Coast.—Point Pola, 18 miles SE. of Point Malatuna, is low, with a sand beach and small reef. At 5 miles to the east of Point Polo lie the village and river of Kraan (Kanaren), near which layers of coal have been found. As far as Sarangani Bay the coast is generally low, and offers no good shelter.

Point Bukud, formed by the hill of the same name, lies 16 miles SE. of Point Pola, and terminates in an islet united to it by a narrow reef. The hill may be easily recognized, being isolated in low land; seen from the west it suggests the form of a table.

Point Bul, 20 miles ESE. of Point Bukud, is surrounded by a reef which is said to extend 1 mile out.

A reef, 2 miles long and 1 mile wide, covered by 5 fathoms water, lies off the coast east of Point Bul, and 3½ miles SW. by W. ½ W. of Point Bulaluan, the western point of Sarangani Bay.

SARANGANI BAY has a width of 7 miles at its entrance between points Bulaluan and Sumban; its sides are very steep and its depth considerable; anchorage may be found in the bights of its coast line, but close to the shore, and with a hawser out to the shore to prevent the anchor slipping into deep water. A coral reef extending 1 mile out surrounds Point Bulaluan, and borders the western and northern shores of the bay. The west coast is arid; the plains to the northwest and north are covered with cogon and abound in deer.

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The volcano Matutung, which lies 19 miles N. by E. of the town of Mlut, in the northwest angle of the bay, is very high and can be seen from a great distance.

Mlut Anchorage is in the angle of the bay north of the town, in 15 fathoms. Good water can be obtained from the river. Communication between Mlut and Lake Buluan, across the mountains, occupies two or three days.

Glan Masila, or Kanalasan Anchorage, though steep, is the best anchorage in Sarangani Bay during the southwest monsoon; it is in Kanalasan Cove, east of Sumban Point, before the village of Glan. Anchorage may be had in 11 to 13 fathoms, with a hawser to the shore, but it is advisable not to anchor before the mouth of the river Glan Masila, which flows into the northern part of the cove, on account of the freshets. The town of Glan Masila (Great Glan) stands on the bank of the river, 2 miles from the mouth.

Light.—A fixed white light is exhibited on the mole on the south side of the entrance of the river; it is elevated 33 feet above the sea, and should be seen in clear weather at a distance of 6 miles.

Point Sumban is high and steep, with but little vegetation on it; it is surrounded by a reef extending 2½ cables to the west and north.

THE SOUTHERN PENINSULA OF MINDANAO is high, and presents several remarkable peaks on it; the southern hill, 1,670 feet high, and in reality round, looks somewhat like a pyramid when seen on an ESE. or WNW. bearing. Seven miles to the NNE. of this round-topped hill is a saddle peak 3,600 feet above the level of the sea, and 8 miles NE. of this saddle mountain there is a high range, the highest peak of which—4,530 feet—has a conical top when viewed from the southward.

The west coast from Point Sumban to Point Tinaka is generally clean except near Bluff Point, or Talayan Point, where the reef extends nearly a mile out. Point Tukapanga is rocky, high, and steep; a reef follows the coast to the SE. from it to Batulaki.

Point Tinaka, or Cape Sarangani, is a hill united to the coast by low land; it presents a bluff point to the south, with a little sand beach, and may be passed at ½ cable's distance; to the eastward of the point there is a large shoal of sand and rock, covered by 5½ fathoms.

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Anchorage.—On the western side of Tinaka Point there is a little bay, Batulaki, open to the SW. and fringed by shoals, which reduce the available space to a width of 6 cables, with a depth of 9 fathoms, lessening gradually to 2½, over a clean, sandy bottom. Safe anchorage may be found in this bay, sheltered from the northeast monsoon. The roadstead of Balangunan and Malavinan, to the eastward of Tinaka Point, are exposed to the sea and afford very indifferent anchorage.

The coast.—Gual Point is low and sloping, with a little reef off it. Points Kamalian and Silakai are foul. Butulan offers temporary anchorage out of the swell of the sea, but exposed to the sea that sets in from cross tides. The depth is great, with 14 fathoms almost touching the shore, and 10 fathoms before the mouth of the river. The coast continues clean and sloping, and almost straight to Point Banos, which is about 72 feet high and peaked. From here it runs N. by E., with a series of high points, to Point Kalian, which is broad and rather remarkable. There is good anchorage off Kalian.

Tides.—It is high water, full and change, at Sarangani Point at 7 hours. Springs rise 6 feet. The flood stream sets to the west between Tinaka Point and Sarangani Islands, and the ebb to the east. On the coast to the northward and eastward it is said that the flood stream sets to the north, and the ebb to the south, the latter being less violent than the flood; also that to the northward of Point Kalian the tide streams are weaker. Strong tide races and violent eddies are prevalent, especially off Banos Point.

SARANGANI ISLANDS consist of two islands and a sand cay, situated 7 miles from the south point of Mindanao. The two islands are separated by a deep channel 1¾ miles wide, reduced by a reef on the east side of Balut Island to a navigable passage 8 cables wide. In this channel the tide streams are very strong, the flood stream setting to the north and the ebb to the south. A shoal covered by 7 fathoms lies nearly in mid-channel, ¾ of a mile from the coast of Sarangani.

EAST COAST.

The east coast of Mindanao runs nearly north and south for a length of 195 miles from Kauit Point to Cape San Augustin, and forms several bays open to the NE. A great chain of mountains runs parallel to the coast and near to it. The coast is imperfectly known, and too great reliance must not be placed on the charts.

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Kauit Point is a spur of the eastern cordillera of Mindanao; when seen from the northward it appears bluff, but viewed from the southeastward it makes like two islands. It is clean and steep to the northward and westward, but a reef projects from it to the eastward for 1½ miles, and borders the coast to the southward for a distance of 10 miles.

Tanda Point, shown on the chart as lying 14 miles S. ½ W. from Kauit Point, is bordered by a reef to a distance of 2 cables. Two islets lie close to the northward of the point. Makangani Island, 4 miles NW. by N. of Tanda Point, is clean; two rocky islets lie off its northern end.

ARANGASA ISLAND.—From Tanda Island the coast trends SE. by S. for 19 miles, as far as Umanum Point. North of this point is the Island Arangasa, separated from the main coast by a narrow channel closed by reefs, which extend 3 miles out, E. and SE. of the island.

Liangan Bay, betweeen points Umanum and Bankulin, is foul, especially along the northern shore, from which a reef runs 2 miles out, inclosing the islet Ayninam. Liangan town is at the bottom of the bay; the chart shows a shoal in the fairway leading to the town, but gives no soundings whatever.

Mr. Looney, Lloyd's agent at Iloilo in 1878, says of Liangan Bay: "The best anchorage is off the convent in 15 fathoms of water. A heavy anchorage should be used, as the land winds are strong. The river marked on the chart as flowing at the head of Liangan Bay is only a shallow creek. The coast here is rocky, and landing after dark is difficult. Supplies of fresh water, buffaloes, and rice can be had, but no vegetables."

The coast, which trends south for 15 miles from Bankulin Point to Bislig Bay, is very foul and bordered by dangerous sand banks which uncover at low water. The town of Kinatuan is situated on the right bank of a river about 12 miles south of Bankulin Point, fronted by Tigdos Islet, which is surrounded by a reef. Supplies of buffaloes and rice can be obtained at Kinatuan, but very little fresh water.

BISLIG BAY AND TOWN.—Masahuron Island, in the middle of the entrance to the bay, is surrounded by shoals which extend ½ mile east and west of the island. In the passage south of the islet there are two rocky shoals very steep-to, having depths of 47 and 65 fathoms very near them. The southern shore of Bislig Bay is clean; the northern shore, on the contrary, is foul, and should not be approached within 6 cables' length.

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Bislig town, a military residence, is at the bottom of the bay on the right bank of the river; the bar at the mouth of the river has 2 feet of water over it at low water, and 8 feet at high water.

The anchorage is before the town in 3½ fathoms, bottom sand and mud, and is completely sheltered from all winds. Fresh water, buffaloes, and rice can be obtained at Bislig, but no vegetables.

Caution.—If without a pilot in approaching the coast of Bislig Bay, do not come into less than 6 fathoms, as the water shoals rapidly. The channel for boats and lanchas is generally marked by bushes or stakes.

The coast.—A reef extends 3 miles out to the east and 6 miles out to the SE. from Sanko Point, the southern point of Bislig Bay. The coast, from this point for 6 miles to the southward, as far as Tambog Point, is bordered by reefs. South of Tambog Point, between that point and Katarman Point, there is a great reef which forms with the main coast a small but safe port; the narrow channel leading to it should not be taken without a pilot.

South of Katarman Point there is a great bank which dries; at the edge of this bank is a depth of 3¾ fathoms, and to the south of it there are two islets surrounded by rocks. A shoal of sand projects ½ mile NW. of Point Tonkil. From the Katel River, south of Tonkil Point, the coast trends south for 13 miles, as far as Kinablagan Point, and is clean.

Kinablagan Point is high and wooded; when seen at a distance it appears like an island. The river and town of the same name lie on the south side of the point. There is anchorage off Kinablagan near the shore in 8 fathoms, but it scarcely merits the name of anchorage, as it is quite open and exposed. The river can be entered by boats only.

Baganga Bay, between points Lambajon and Daguet, offers good anchorage during the southwest monsoon in 5 fathoms, a reef which projects from Daguet Point giving shelter from the east and southeast; but during the northeast monsoon the anchorage is quite untenable on account of the heavy sea which sets in. Daguet Point is detached from the coast, and consists of white sand covered by low wood. A shoal of 4½ fathoms water lies off it.

From Daguet Point the coast trends south for 15 miles as far as Karaga Bay, and presents low points and some small

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rivers. A few villages of slight importance stand on the shore.

Karaga Bay, between points Sankol and Pusan, is semicircular in form, open to the eastward, and penetrates about 2 miles inland. The village of Sankol stands on the shore near the point, and near a cocoanut plantation. There is anchorage in 4½ fathoms WNW. of Point Pusan, off some rocks at the commencement of a beach, but it is exposed to the swell; there is also anchorage off Tubu on the south side, sheltered from the southerly winds; it is the only place on the south coast where there is a sand beach. Sankol Point is low; a rocky shoal covered by 1½ fathoms water projects a mile out from it.

Pusan Point is low, and formed of cavernous rocks; it is clean, and may be rounded at a cable's distance. The current begins to be strongly felt off this point, and at spring tides violent eddies are produced, raising a high sea.

Bunga Point, 9 miles south of Pusan Point, is the first point which is not mountainous met on coming northward from Cape San Augustin. There is a bay south of the point, on the shore of which stands the village of Manai, with a little fort surrounded by cogonals of a red color.

Buan Point, 6 miles south of Bunga Point, is sandy, with a narrow reef off it, and may be recognized by a cogonal on it. A little river, which can be entered by boats only, passes through the cogonal. Fresh water can be obtained from it.

Maglubun Point, 4 miles S. by W. of the last point, is clean and projecting and easy to recognize. Several villages stand on this part of the coast, which is clean and wooded, but beaten by the sea. The village and fort of Mamponon are near a small river, but there is too much sea on the coast for anchorage.

Mayo Bay, between Tugubun Point, 8 miles south of Maglubun, and Lamigan, is a large bay, over 5 miles wide at the entrance between these two points, and penetrating 7 miles to the westward; it is but little known. Tugubun Point is hilly and wooded; a shoal of sand rock projects 1 cable from it. Yukatan Anchorage is on the north shore, 2 miles west of Tugubun Point. Points Flaca and Gorda, west again of Yukatan, are formed by hills which terminate in low points; a reef extends 2 miles out from Gorda Point.

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PUJADA BAY (ch. 26, p. 173), separated from Mayo Bay by the long peninsula of Guanguan, which terminates in Lamigan Point, would be the best in Mindanao were it not for the very great depth of water in it. It penetrates some 10 miles from the entrance, and has an extreme width of 5 or 6 miles about the middle of it. Pujada Island, 200 feet high, divides the entrance into two channels; of these, the southern, although the narrowest, is the safest on account of the reefs on both sides of the northern channel; the reef of Pujada Island extends 2 miles eastward, and ends in a flat-topped islet or rock; the sea breaks on this reef even at high water.

Lamigan Point, the northern point of the bay, is said to be clean to seaward, but fringed on the side of the bay by a wide reef as far as Batiano Point, and should not be approached within ½ mile. Velasco Shoal, awash at low water, is reported to lie SE. by E. of Piedra, with a depth of 18 fathoms between it and the point; neither Velasco Shoal nor points Batiano and Piedra are given on the chart. The shore continues foul as far as the town of Mati; a small creek, 3 miles ESE. of Mati, leads to an isthmus 40 yards wide, separating the bays of Pujada and Mayo. The natives haul their canoes across this neck of land and launch them in Mayo Bay.

Mati is a small town, standing in a wide prairie land, surrounded by picturesque scenery; the shore near it is steep-to, and there is a depth of 11 to 13 fathoms close in. Good water is obtainable, but provisions are scarce. The coast at the head of Pujada Bay makes several indentations, the principal of which is called Balete Port. Kamainsi Point, in this locality, is foul.

Makambol Point, on the south side of Pujada Bay, ends in a reef, to the westward of which there is anchorage in 8 fathoms near the shore. A shoal of 2¾ fathoms water lies off the point. There are plantations of cocoanut and plantains on this part of the coast. Off Magun (not marked on the chart), east of Makambol, there is indifferent anchorage exposed to the sea.

Tumadgo Point, the southern point of Pujada Bay, and also Alo Point, a little to the southward, are peaked and clean.

Tides.—In Pujada Bay it is high water, full and change, at 7h. Springs rise 6 feet.

Steamers from Zamboanga and Palak trade to Mati. The shores of the bay abound in good timber, such as Alintato,

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an ebony; Molavi, a teak; Camunu, *Connarus santaloides*, useful as a cabinetmaker's wood; and cedar. Cacao, coffee, and tapioca are cultivated; mastic of good quality, wax, and honey are plentiful; deer and mountain hogs abound.

Coast.—Luban Point, off which there is a small round islet, is clean and bold; in a small bay to the northward of the point vessels can find shelter in 5½ fathoms during the southwest monsoon, while waiting for favorable weather to round Cape San Augustin. The coast between Point Luban and Pujada Bay is clean, and presents several scarped points with patches of red cogonal on them. The coast between Point Luban and Cape San Augustin is high and clean, with little points of sand and rock.

Currents on the east coast of Mindanao.—A constant current to the south has been observed on this coast, especially at a distance beyond 4 miles from the shore; within this distance the tides preserve their influence in some places, but near the projecting points the current remains constant. To the northward of Mayo Bay (ch. 26, p. 173) this current shows itself in strong races, which increase on approaching Pusan Point, where they attain their greatest force. They are very violent off Daguet Point, and also off points Lambajon and Kinablagan. In order to lessen the effect of the current, a vessel should keep at a good distance from shore. Near the coast the sea is always very rough and choppy, and vessels suffer a good deal from it.

DISTRICT OF BASILAN.

It is situated on an island to the south of Mindanao and opposite the District of Zamboanga, and is 21 miles long by 14 wide. The island is crossed in all directions by a mountain chain covered with luxuriant vegetation and abounding in streams of potable water. Three of its mountains have an altitude of from 3,300 to 3,600 yards. The products are rice and sugar cane. Starting from Mindanao it is connected with Borneo by a long chain of islets extending in a southwesterly direction. The population is 12,000.

The capital is **Isabela de Basilan,** with a population of 1,300. It is situated about 600 miles from Manila, and is defended by a fort.

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DISTRICT OF COTTABATO.

It is bounded on the north by the districts of Misamis and Surigao, on the east by Dávao, and on the south and southwest by the Celebes Sea and the Bay of Illana. It is a military establishment.

The capital is **Cottabato,** with a population of 3,000. It is situated 138 miles from Manila.

CITIES AND TOWNS.

Pollok (ch. 27, p. 175).—Population, 295; situated 10 miles from Cottabato.

Tamontaco.—Population, 1,900; situated 3 miles from Cottabato.

DISTRICT OF DAPITAN.

Situated in the northern part of the island of Mindanao, it is bounded on the north by the Visayas Sea, on the east by Misamis, on the south by Zamboanga, and on the west by the Visayas Sea. The area is 4 square miles and the population 12,615.

The capital is **Dapitan,** with a population of 3,955. It is situated 190 miles from Zamboanga.

CITIES AND TOWNS.

Dipolo.—Population, 4,611; situated 9 miles from Dapitan.

Haya.—Population, 1,099.

Lubungan.—Population, 5,157; situated 20 miles from Dapitan.

DISTRICT OF DÁVAO.

It is bounded on the north by the District of Surigao, on the west by that of Cottabato, and on the south and east by the Pacific. The country is very mountainous and covered with forests; all vegetables grown in the rest of the archipelago are raised here. The population is 8,000.

The capital is **Dávao.** It is situated at the head of Dávao Bay and opposite the island of Samar.

CITIES AND TOWNS.

Baganga.—Population, 2,700; situated 160 miles by water from Dávao.

Bago.—Population, 7,000; situated 15 miles from Dávao.

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Caraga.—Population, 4,000; situated 175 miles by water from Dávao.

Luzon.—Population, 7,477; situated 45 miles from Dávao.

Quinablagan.—Population, 500.

DISTRICT OF MATTI.

Situated in the northern part of the island of Mindanao, it is bounded on the north by Surigao, on the east and south by the Pacific, and on the west by Dávao. The population is 9,764.

The capital is **Matti,** with a population of 600. It is situated 375 miles from Zamboanga.

CITIES AND TOWNS.

Baganga.—Population, 1,114; situated 50 miles from Matti.

Caraga.—Population, 8,690; situated 65 miles from Matti.

Cateel.—Population, 3,500; situated 115 miles from Matti.

Dapuan.—Population, 500.

Quinablangan.—Population, 299.

Siguboy.—Population, 900; situated 45 miles from Matti.

DISTRICT OF MISAMIS.

It is bounded on the north by that part of the sea which separates Mindanao from the Visayas, on the east and south by the District of Cottabato, and on the west by the District of Zamboanga. This district includes the island of Camiguin, situated to the northwest of Point Divata. Much rice and cacao is raised. The country comprised in the District of Misamis is mountainous, covered with thick forests, and very fertile. There are some gold mines, but they are not worked. The district is divided into 27 pueblos, 18 barrios, and 34 rancherías of subdued infieles. The population is 113,695.

The capital is **Cagayán,** with a population of 9,405.

CITIES AND TOWNS.

Agusam.—Population, 934; situated 15 miles from Cagayán.

Alorang.—Population, 2,700; situated 4 miles from Cagayán.

Alubijit (ch. 17, p. 150).—Population, 6,716.

Balingasac (ch. 15, p. 149).—Population, 3,948; situated 8 miles from Cagayán.

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Catasman.—Population, 4,874; situated 50 miles from Cagayán.

Guim Liban.—Population, 1,875.

Guingoog.—Population, 1,433; situated 65 miles from Cagayán.

Guza.—Population, 790.

Iligan.—Population, 6,020; situated 65 miles from Cagayán.

Initao.—Population, 3,412, the township having 3,462; situated 45 miles from Cagayán.

Iponan.—Population, 5,586; situated 10 miles from Cagayán.

Jasaan.—Population, 9,444; situated 22 miles from Cagayán.

Jimenez.—Population, 8,707; situated 75 miles from Cagayán.

Langarang.—Population, 11,779; situated 138 miles from Cagayán.

Layonlong.—Population, 1,834; situated 30 miles from Cagayán.

Loculan.—Population, 2,110; situated 80 miles from Cagayán.

Maguinog.—Population, 4,687.

Mambajao.—Population, 18,000; situated 53 miles from Cagayán.

Maria Cristina.—Population, 140.

Misamis.—Population, 6,075; situated 85 miles from Cagayán.

Mulugan.—Population, 1,044; situated 15 miles from Cagayán.

Naanan.—Population, 890; situated 23 miles from Cagayán.

Oroquieta.—Population, 9,000; situated 62 miles from Cagayán.

Pigtao.—Population, 354; situated 8 miles from Cagayán.

Quiniquitam.—Population, 1,320; situated 50 miles from Cagayán.

Sagay.—Population, 5,066; situated 48 miles from Cagayán.

Salay.—Population, 1,816; situated 27 miles from Cagayán.

Salvador.—Population, 2,845; situated 20 miles from Cagayán.

Santa Ana.—Population, 881; situated 20 miles from Cagayán.

Tagoloan.—Population, 3,378, the township having 6,927. It is situated 12 miles from Cagayán.

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Talisayan.—Population, 1,684; situated 55 miles from Cagayán.

DISTRICT OF SURIGAO.

Situated in the northern part of Mindanao, it is bounded on the north by the Surigao Sea, on the east by the Pacific, on the south by the District of Dávao, and on the west by the territory of the infieles. It is mountainous, but the Christian population resides on the coasts and in the northern point of the territory. The population is 95,775, distributed among 45 pueblos, 10 barrios, and 30 rancherías of subdued infieles. Abacá and palay are raised, and in the gold washings considerable gold of good quality is found.

The capital is **Surigao** (ch. 28, p. 178), with a population of 6,285. It is situated in the extreme north of the island, and is the residence of the governor, judge, and a number of officials.

CITIES AND TOWNS.

Anao-Aon.—Population, 602; situated 10 miles from Surigao.

Bacnag.—Population, 569.

Bislig.—Population, 7,583; situated 62 miles from Surigao.

Butuan.—Population, 10,543; situated 75 miles from Surigao.

Cabuntog.—Population, 4,175; situated 78 miles from Surigao.

Cantilan.—Population, 10,026; situated 27 miles from Surigao.

Carrascal.—Population unknown; situated 45 miles from Surigao.

Catel.—Population, 1,861.

Dapa.—Population, 1,900.

Dapuan.—Population, 407.

Dinagat.—Population, 5,264; situated 12 miles from Surigao.

Fabonga.—Population, 1,644.

Gigaquit.—Population, 7,116.

Ginatuan.—Population, 2,277.

Lianga.—Population, 6,340.

Mainit.—Population, 4,550; situated 70 miles from Surigao.

Nonoc.—Population, 541.

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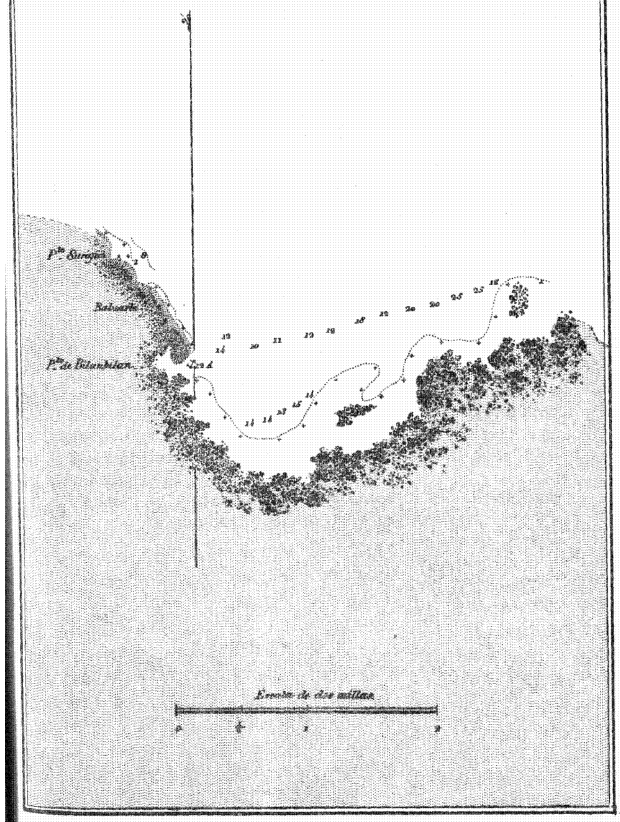
PUERTO DE SURIGAO.



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Numancia.—Population, 4,111; situated 50 miles from Surigao.

Reunion.—Population, 2,272.

San Juan.—Population, 335; situated 75 miles from Surigao.

Sapao.—Population, 1,300.

Taganaan.—Population, 1,562.

Tago.—Population, 1,909.

Tandag.—Population, 5,210; situated 85 miles from Surigao.

Tubay.—Population, 505; situated 70 miles from Surigao.

DISTRICT OF ZAMBOANGA.

Situated in the extreme southwestern part of Mindanao, it is bounded on the north and west by the Sea of Mindanao, on the south by the Strait of Basilan, and on the east by the districts of Misamis and Cottabato. All vegetables peculiar to the archipelago are grown, but there is no especial industry.

The capital is **Zamboanga,** with a population of 21,300. It is a fortified place and a naval station, and has a fine barracks and the castle of San Felipe, which dominates the town and harbor.

CITIES AND TOWNS.

Ayala.—Population, 1,900; situated 9 miles from Zamboanga, with which it is connected by highroads.

Mercedes.—Population, 2,372; situated 10 miles from Zamboanga.

Santa Maria.—Population, 2,200; situated 1 mile from Zamboanga.

Tetuan.—Population, 5,643; situated 1 mile from Zamboanga, with which it is connected by highroads.

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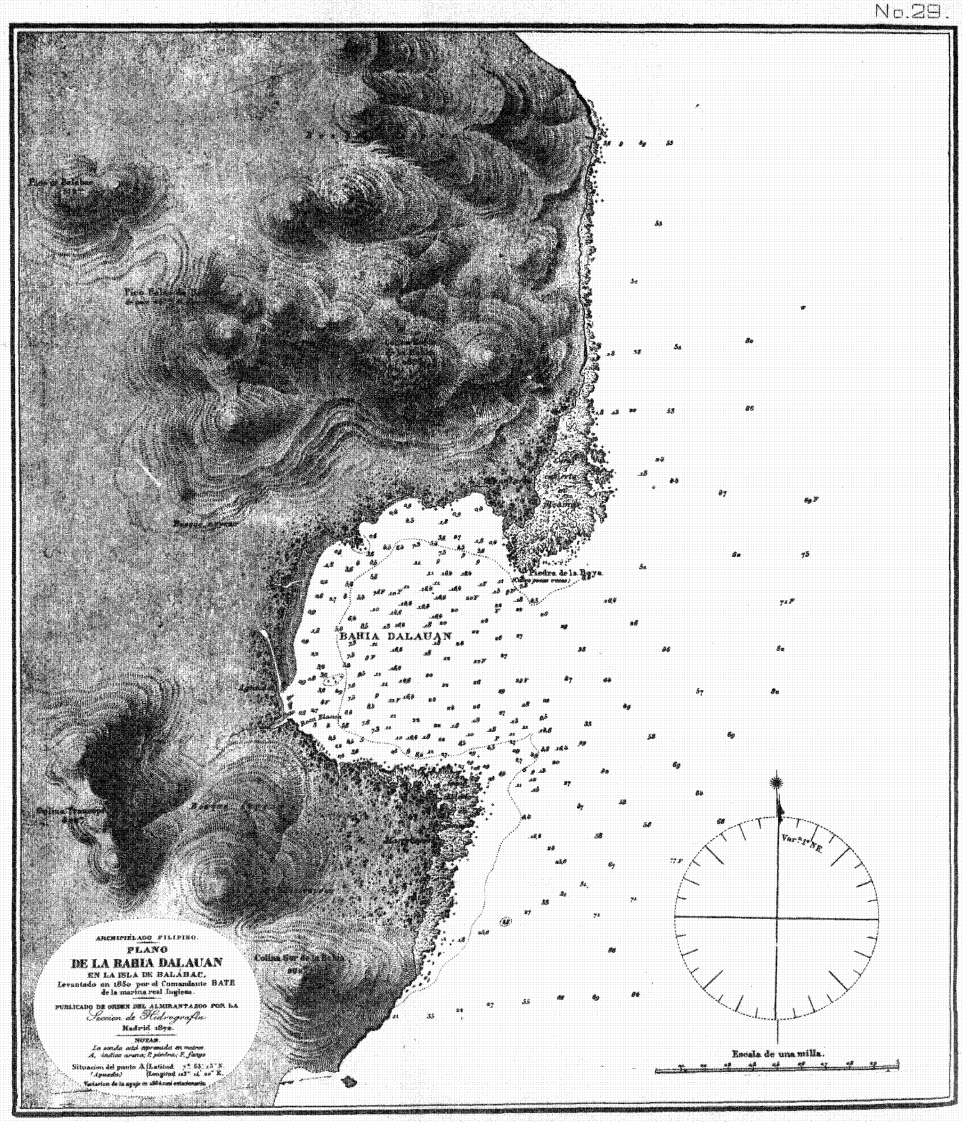

BAHIA DALAUAN
Piedra de la Boya
Colina Gur de la Bahia
Var.ª 1.ª N.E.
Escala de una milla.
ARCHIPIÉLAGO FILIPINO.
PLANO
DE LA BAHIA DALAUAN
EN LA ISLA DE BALÁBAC.
Levantado en 1850 por el Comandante BATE
de la marina real Inglesa.
PUBLICADO DE ORDEN DEL ALMIRANTAZGO POR LA
Seccion de Hidrografia
Madrid 1870.
NOTAS.
La sonda está expresada en metros
A, indica arena; P, piedra; F, fango
Situacion del punto A (Latitud 7° 53' 13" N.
(Aguada) Longitud 113° 14' 00" E.
Variacion de la aguja en 1864 casi estacionaria.

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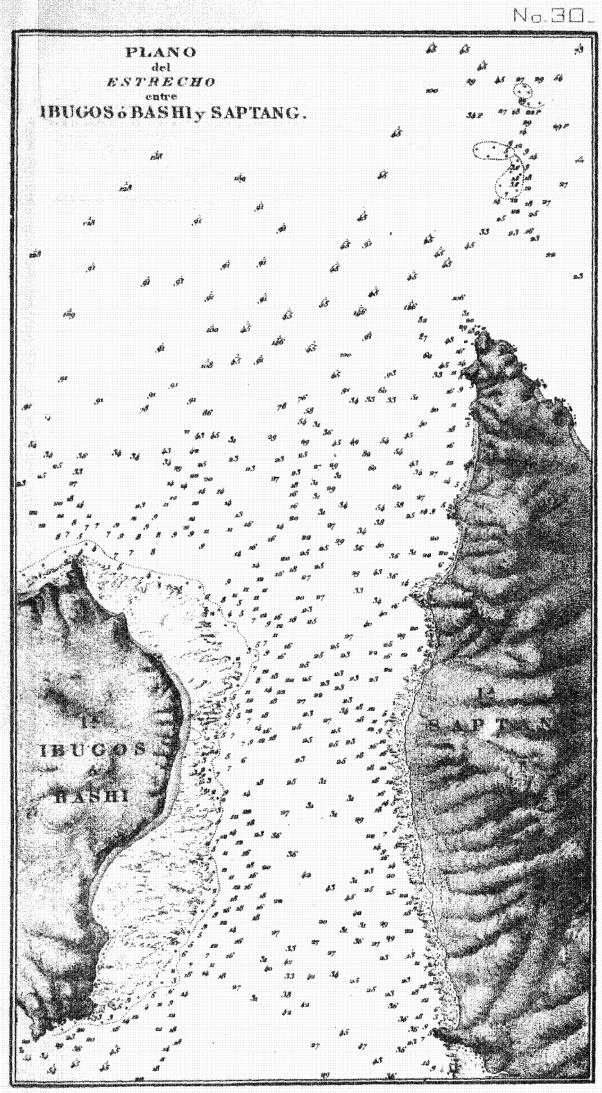

ESCALA PARA LOS PLANOS.

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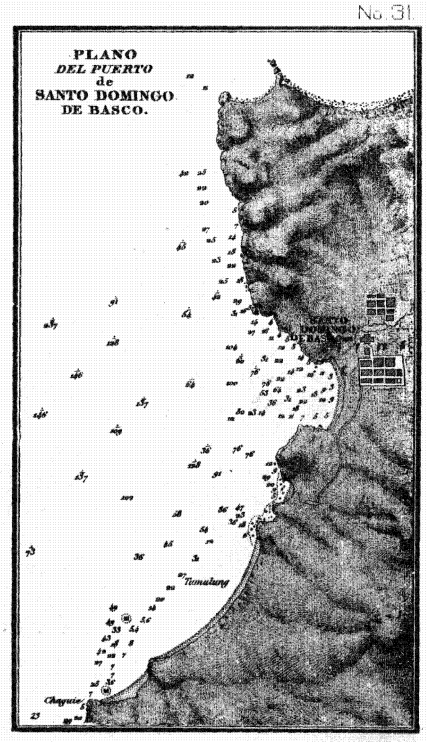

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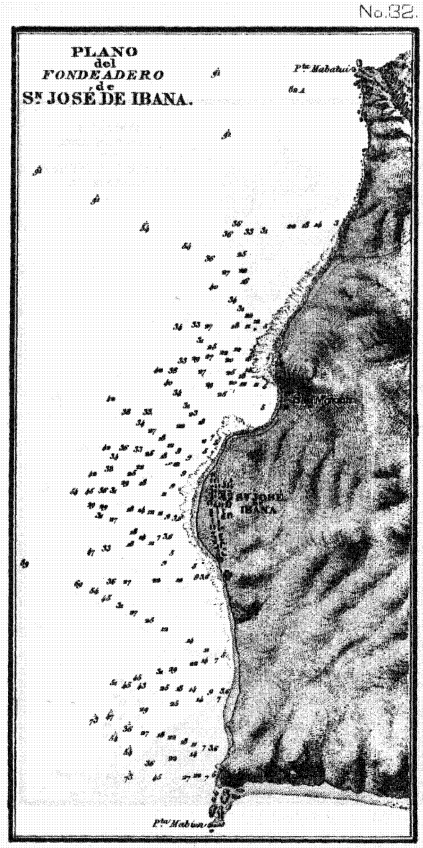

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ADJACENT ISLANDS.

ISLAND OF BALÁBAC.

(Ch. 29, p. 181).

A military establishment formed in 1857. The island is situated in the strait of its name to the southwest of Paragua. It is 22 miles long, from north to south, and 14 miles from east to west, and has a population of 1,100. The ground is very irregular, the maximum altitude being 1,899 feet; timber abounds and there is plenty of good arable land.

The capital is **Balabac,** with a population of 200. It is situated on the Bay of Calandoran, and is surrounded by mountains of from 900 to 1,300 feet in height. It has a barracks, hospital, warehouse, armed fort, and pretty houses along the seashore.

PROVINCE OF THE BATANES ISLANDS.

This group of islands is situated in the Japan Sea, north of Manila and a few miles to the north of the Babuyanes Islands. The principal ones are Itbayal, Basay, Saptan (ch. 30, p. 181), and Hugos. The area is 125 square miles and the population 9,475.

The capital is **Santo Domingo de Basco** (ch. 31, p. 181), with a population of 2,981. It was the residence of the politico-military governor, a judge, and an attorney-general (promotor fiscal). It is situated 504 miles from Manila.

CITIES AND TOWNS.

San Bartolome de Calayan.—Population, 1,722.

San Carlos de Marigatao.—Population, 1,229.

San José de Ibana (ch. 32, p. 181).—Population, 1,951; situated 13 miles from Santo Domingo de Basco.

Santa Maria de Mayan.—Population, 1,855.

San Vicente de Saptang.—Population, 1,753.

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DISTRICT OF BURIAS.

Situated on an island in the Strait of San Bernardino between Luzon and Masbate, it is bounded on the north by Camarines Sur, on the east by the Strait of San Bernardino, on the south by Masbate, and on the west by Tayabas. It is 34 miles long by 13 wide, and the population is 1,601, distributed among one pueblo and five barrios. The country is mountainous, with much timber, but the latter is hard to cut and bring to harbor; some stock is kept.

The capital is **San Pascual,** situated 214 miles from Manila.

PROVINCE OF CALAMIANES.

The Calamianes Islands are situated to the southeast of Manila, and are composed of the islands of Busungan, Calamianes, Linapocan, Cuyo, Dumaran, Agutaya, and the northern part of Paragua, ceded by the Sultan of Borneo to Spain at the end of the past century. They are bounded on the north and west by the China Sea, on the east by the Visayas Sea, and on the south by the island of Paragua. They have an area of 340 square miles and a population of 16,500. The island of Cuyo, 10 miles long by 4 wide, is surrounded by islets. It is thickly populated, and has a small but safe harbor, defended by an armed battery. In Agutaya is another small fortress; the inhabitants of this island receive arms and ammunition from the government. Calamianes is 24 miles long by 11 wide, and has one fortress. Coron is sterile, but has a source of wealth in its edible birds' nests, for which the Chinese pay double their weight in silver. In Paragua reside the governor, the judge, the promotor, and a disciplinary company. Spanish authority is recognized only by the inhabitants who live within 62 miles of the coast, the remainder living miserably in a savage state.

The capital is **Cuyo,** with a population of 8,258. It is situated on the island of Paragua.

CITIES AND TOWNS.

Agutaya.—Population, 2,046; situated 12 miles from Cuyo.
Culion (ch. 33, p. 182).—Population, 3,500.
Taytay.—Population, 2,331.

PROVINCE OF CORREGIDOR.

It is situated to the west, south, and east of Manila, at the very mouth of Manila Bay, and between the provinces of

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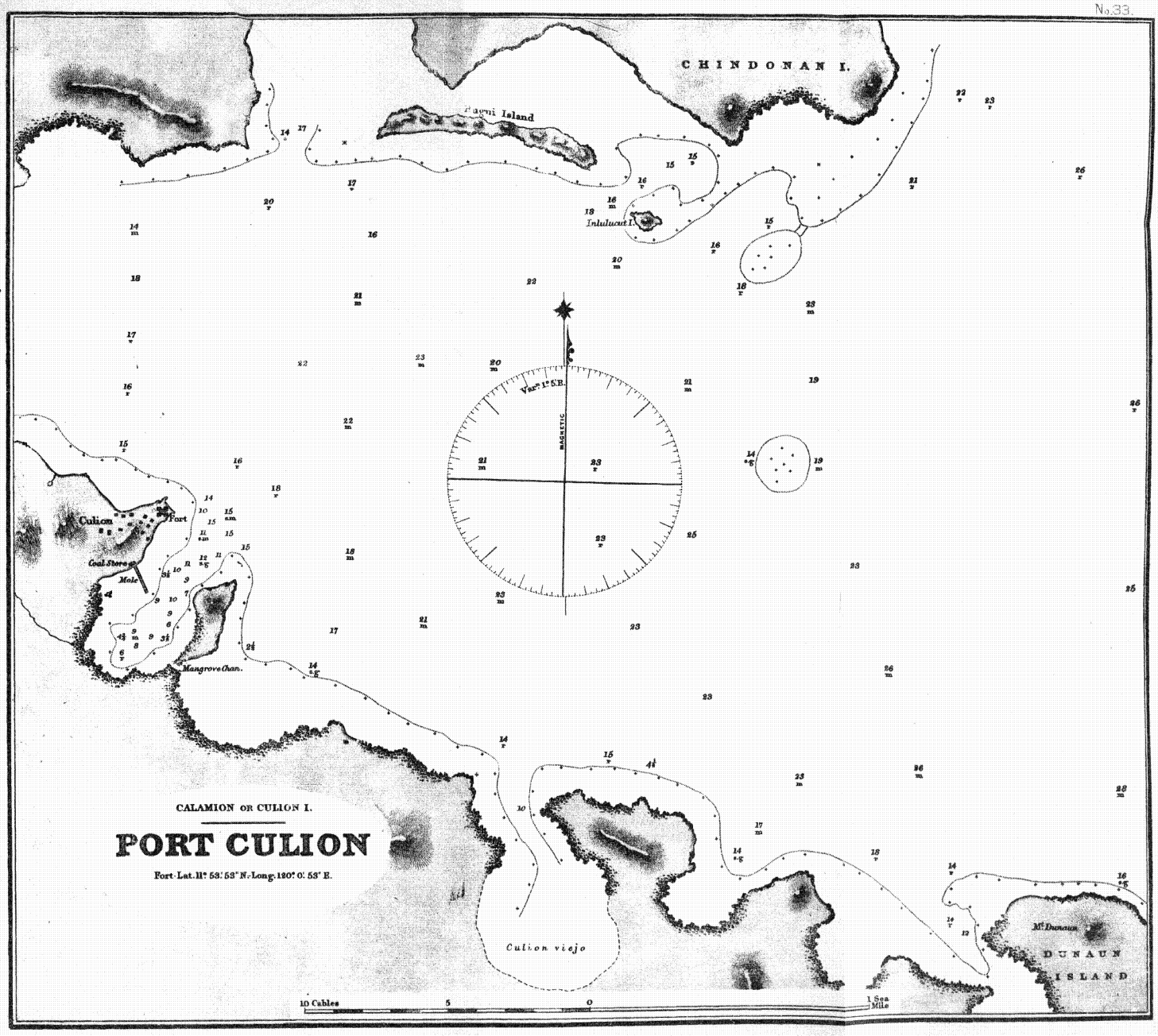

CALAMION OR CULION I.

PORT CULION

Fort Lat. 11° 53' 53" N. Long. 120° 0' 53" E.

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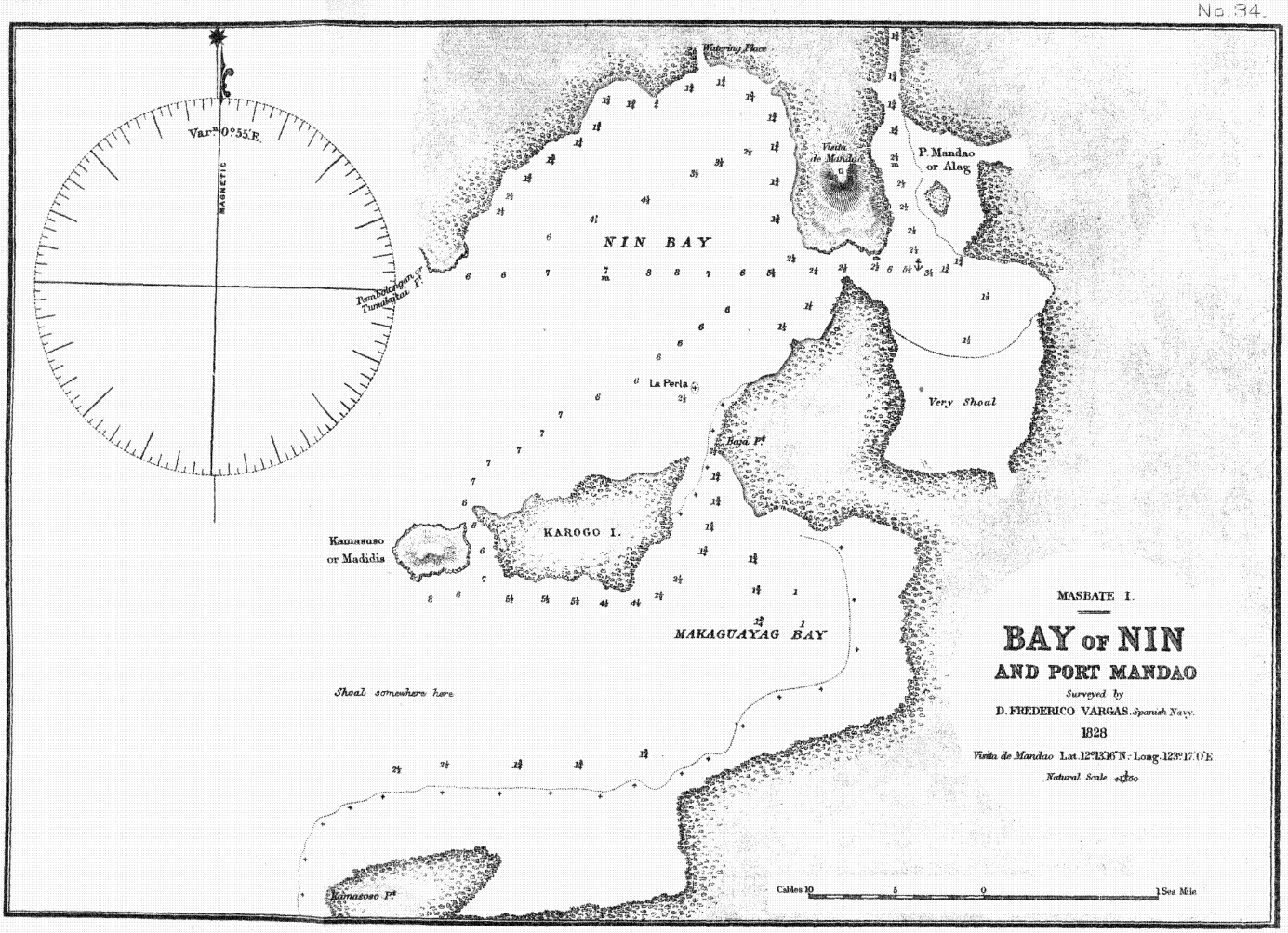

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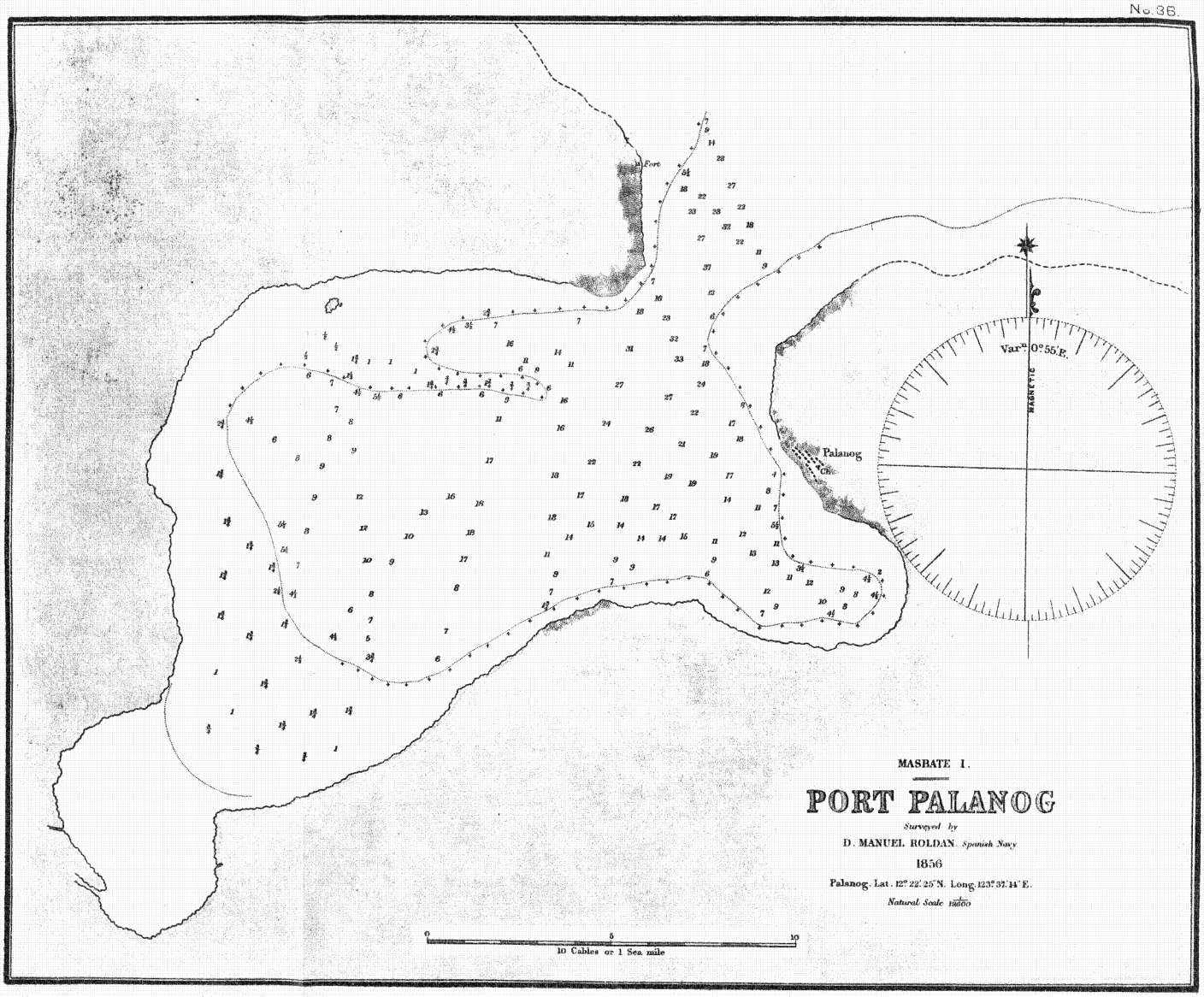

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Cavite and Bataan, and is about 2 miles long by 1 mile wide. The ground, though high and broken, holds good vegetation, and game is abundant. There is a semaphore station and a lighthouse, the employees of which constitute the greater part of the inhabitants, although there was a small military and naval garrison. There was a politico-military governor. The area is 16 square miles and the population 569.

The capital is **San José,** with a population of 514. It is situated 27 miles from Manila.

PROVINCE OF MASBATE (chs. 34, 35, and 36, p. 183) AND TICAO.

It is composed of the two above-named islands, situated to the south of Luzon and north of Visayas. The former is 62 miles long by 20 wide and the latter 27 miles long by 13 wide; both are mountainous and very fertile, good tobacco and other products being raised. There are gold mines, abundant timber, resins, gums, rattan, etc. There is considerable gold in the river sands. The area is 123 square miles and the population 26,497, divided among 10 pueblos and 15 visitas.

The capital is **Masbate,** with a population of 2,345.

CITIES AND TOWNS.

Baleno.—Population, 923; situated 10 miles from Masbate.

Lauang.—Population, 1,294; situated 9 miles from Masbate.

Milagros.—Population, 1,789; situated 13 miles from Masbate.

Mobo.—Population, 1,896; situated ½ mile from Masbate.

Mogpoc.—Population, 5,214; situated 10 miles from Masbate.

Palanas.—Population, 2,749.

San Agustin.—Population, 1,129.

San Fernando.—Population, 2,367.

San Jacinto.—Population, 2,459; situated 11 miles from Masbate.

Uson.—Population, 2,105; situated 56 miles from Masbate.

ISLAND AND PROVINCE OF MINDORO.

The island and province of Mindoro lies in the strait of its name and south of Luzon. It has in the center an elevated plain from which many sierras extend in different directions

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to the coast, making the latter rugged and dangerous. The island is of an oval form, with a prolongation of the northern portion toward the west. Though an easy day's sail from Manila, it is one of the least populous islands of the archipelago, being extremely mountainous, covered with dense forests, and in the more level parts near the coast full of marshes, and very unhealthful. The inhabitants of the coast are Tagals, but in the interior there is a low tribe of the Malayan race, probably the indigenes of the island, and called Manguianos, speaking a peculiar language and living in a very miserable manner on the products of a rude agriculture. There are also said to be some Negritos, but of these very little is known. There are many short streams. The island is 110 miles long and has an area of 3,087 square miles. The population is 106,170. There is little known of the mountains of the interior, as the inhabitants dwell mainly on the coasts. Mindoro constitutes one of the provinces of the Philippines under an alcalde.

The capital is **Calapan**, with a population of 5,585. It is situated to the north, on the harbor of its name, defended by a fort of regular construction; it has about 500 houses, among the notable stone ones being the parish, courthouse and jail, and casa real. It is the residence of the alcalde mayor and several public functionaries. The city is situated 96 miles from Manila.

ITINERARY OF COAST OF MINDORO—NORTH COAST.

Mount Kalavite is a long-backed promontory, the western slope of which forms Cape Kalavite, and the northern slope Point del Monte; the summit, about 2,000 feet high, appears dome-shaped when seen from the west, but from the north or south it shows a long ridge fairly level; the western end of this ridge is the highest part.

Binuangan Point, 3 miles NNE. of Cape Kalavite, resembles it in appearance, and is bold to approach, the few rocks interspersed along this part of the coast lying close in.

Anchorage.—South of Binuangan Point there is a small bight with a sand beach, in front of which there is anchorage during the northeast monsoon in 5½ fathoms, sand, at 1½ cables from the beach. A rivulet of good water enters here. There

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is another anchorage immediately north of Cape Kalavite, but it is not so good.

Point del Monte, or Santo Tomas, is of sand, with a small bank of 1 fathom water off it; between it and Abra de Ilo, 15 miles to the eastward, the coast is high, thickly wooded, and bordered by sand beaches. Point Bagalayag is girt with rocks which extend a mile along the coast.

Abra de Ilo is a cove between two coast hills; the shore is very low and sandy, semicircular in form, of 3 miles across, but of little depth. Toward the middle there flows a river of fresh water, which can only be entered by small coasters and bancos at high water. The bottom is of sand, and the anchorage gives shelter to vessels of all sizes in southwest winds, in 3 to 12 fathoms; but good ground tackle is required, as the squalls offshore are very violent.

Coast.—From Abra de Ilo to Port Galera the coast can be approached in safety to ½ mile; the coast is of moderate height, and shows a few points separated by beaches. The high land approaches the coast, and two water courses descend from the ravine.

Point Minolo, 2 miles west of Port Galera, is covered with trees; on its eastern side is a beach, before which anchorage can be had on sand and gravel. The shore is steep, and there are 25 to 30 fathoms at 3 cables from it.

Port Galera is formed by a promontory from the coast of Mindoro and the islets Medio and Panikian. These islets, situated at the entrance of the bay, close it to the westward, forming the port, which is a sort of canal, or silanga, with two passages, one to the northward and the other to the northwest, the opening between Panikian and the coast being a blind lead (Boca falsa).

The flood stream passes into the port by the northwest channel and out by the north channel, and then follows to the eastward, the reverse taking place with the ebb stream. This fact must be remembered in making the port.

From Point Escarceo, the eastern point of the promontory, to the north point of Medio, the shore presents a uniform appearance, and the north channel is difficult to discover, but a signal post over the northeast point of entrance and a remarkable white patch like a sail on the fall of the point are marks which indicate it. The beaches are small, and the land above covered with trees.

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Medio is about 8 cables in extent, NNW. and SSE., clean; and the soundings round it show 4 fathoms at less than a cable's distance in general; the reef that fringes the northern shore grows out but a very little way. The north point, where there is a great tide race, is worn away and shows bare rocks; from it to the SSW. the coast is high and jagged.

Panikian is a little over a mile long, north and south; there is a reef on its east side, and the soundings off it are 4 fathoms at less than a cable; the northwest shore is high and rugged to the south; it ends in a sandy point, forming with Mindoro a channel ½ cable wide, closed by sand; this is called "Boca Falsa."

Directions—North Channel.—After clearing the north point of Mindoro, keep in the middle of the channel, where the depth is 6½ fathoms, coarse sand and rock; it is a cable wide at the entrance, but lessens to ½ cable abreast of the east point of Medio, which is low and bordered with a sand bank. The tidal streams are strong enough to expose a vessel, badly equipped, to being thrown on the rocks that terminate the points.

Northwest Channel.—This must not be confounded with Boca Falsa, south of Panikian. A vessel coming from the westward should steer for the middle of Medio, and on nearing it a clump of mangroves on the southwest point will be made out; she should then steer in that direction until the entrance is opened, and then keep in the middle of the channel to the anchorage. This channel is narrowed at the entrance to ½ cable's width by the rocks off the southwest point of Medio, but it widens inside to 2 cables; the least depth is 6½ fathoms at the entrance, increasing inside to 15 fathoms.

During the northeast monsoon the north channel is the best, but with sailing ships even that channel is dangerous, as calms or baffling winds may be met, and then the vessel would be at the mercy of the tide.

During that monsoon the anchorage at Varadero is preferable, although for sailing vessels going out it would be difficult at that time.

Anchorage.—The available space inside the islands is considerably reduced by projections from the promontory of Mindoro of low land with shoal water between them, and by a shoal that advances from the southern part, having on its northeastern end rocks that wash at very low water. The

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anchorage is in a confined creek in the southwest part; at the entrance, which is 1½ cables wide, the depth is 6½ fathoms, shoaling toward the town at the bottom. At 1½ cables north of the mouth there is another shoal with rocks awash at low water on its southern part. Between this shoal and Boca Falsa there is a space of 1½ cables width, and 7 to 10 fathoms depth, which would appear to afford better anchorage.

Point Escarceo, so named from the tide rips off it, is of jagged rock, covered with trees; the shore between it and Point Boaga, 1½ miles to the SE., is clear, with deep water off it. The currents run here with great velocity, causing strong eddies.

Varadero Bay is open to the SE.; it is 4½ cables across at the mouth, ½ mile in depth, and affords an excellent anchorage for all classes of vessels in both monsoons, especially during the southwest season, when the heavy squalls pass to the northward of it. It is decidedly preferable to Port Galera, especially in bad weather. The best anchorage for large vessels is in 7 to 10 fathoms, SE. by E. of Port Galera, at 2 cables' distance from the sand beach, between two points of rock at the bottom of the bay.

Point Boaga, the northern point, is clear, but the southern point, Varadero, sends out rocks to a cable's distance, which wash at low water. This point, therefore, must be given a wide berth.

Suban is a little town on the summit of a hill, at a distance of 6 miles SSE. of Point Escarceo. Near the town is a bay, with anchorage sheltered from the SW. in 7 fathoms, sand.

Shoal.—The Spanish Derrotero describes a shoal growing out to the NE. for ¼ of a mile from the western point of this bay. This is not shown on the Spanish chart, but there is on the chart a shoal of 3½ fathoms at 1½ miles east of the town. The Derrotero remarks that this reef is dangerous, as the water over it is of the same color as that surrounding it.

The French "Instructions Nautiques" note that to the east of the town, at ½ mile from the shore, is the farthest point of a bank of sand and rock, on the edge of which is 3½ fathoms.

Coast.—From the Bay of Suban the coast curves gently round to the eastward, and at the distance of 3 miles a delta commences, formed by the washings of the river Bako and others, producing 4 miles of confused coast line, cut into by bars and passages as far as Point Baliti, the western point of the Bay of Calapan.

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Soundings.—From the mouth of the river Bako toward the islets Bakos the soundings are 4½ fathoms at ⅔ of a cable's distance, 75 at 2 cables, and no bottom at 109 fathoms at 3 cables' distance off Point Baliti. The reef of sand and rocks extends to 3½ cables' distance.

CALAPAN.—This is the capital of the Province of Mindoro. The inhabitants are occupied in hunting, fishing, and ordinary weaving. The commerce is insignificant. Sand banks extend in front of the town to a distance of ½ mile. To clear these, the northern Silonai islet should not be shut out by Point Calapan. On this line, near the north edge of the banks, the soundings are 36 to 46 fathoms. This depth rapidly lessens toward the shore, and the anchor should be let go when the lead shows 25 fathoms, to avoid shooting onto the bank.

Directions.—The safest course for entering or leaving this bay is to keep in the middle of the passage between the Bakos Islets and the coast of Calapan, and when the southernmost of these islets bears north to steer for the anchorage.

Point Calapan, or Tibao, is low and wooded and has on its summit a cogonal or reed plantation; the point is clear, but a fringe of rocks close to the beach continues to the SE. with 40 fathoms close to it.

SILONAI ISLETS.—The small southern islet of that name is 1 mile ESE. of Point Calapan; it is shaped like a sugar loaf and surrounded by rocks. The channel between it and the coast is only fit for coasters, having a depth of less than 5 fathoms. At ½ mile from it, and 1 mile NE. by E. of Point Calapan, is the larger Silonai islet; it is fringed with rocks which advance on the northern side to 1½ cables' distance. Between the islets the passage is 3 cables wide and 20 fathoms deep. Vessels should be careful to keep in the middle of it.

BAKOS ISLETS.—This is a group of three rocky islets extending 2 miles NE. and SW., situated NNW. 2½ miles from Point Calapan. The vicinity is foul, and the chart shows a danger on the northern side of the northern islet. A shoal of 1½ fathoms lies 1 mile SW. of South Bakos. In the middle of the passage between the northern and middle Bakos there are rocks which uncover; in the other channels the depth is sufficient, but the rapid currents that prevail here should prevent a vessel from taking them.

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NORTHEAST COAST.

From Point Calapan (Tibao) to Naujan, 13 miles to the SE., the coast is low, with beaches of sand and thick wood, cut into by various rivulets and estuaries which can only be entered by boats at high water. At a distance of 1 cable from the shore the soundings are 4½ to 7 fathoms, sand and mud, and at ½ mile from Naujan 5½ to 8 fathoms, fine sand. The rivers to the NW. of Naujan send out sand banks with only ¼ of a fathom on them to 2 cables' distance. The chart shows a shoal at ¾ of a mile from the shore.

NAUJAN RIVER AND BAR.—The river Naujan can be entered only by boats, the width at the mouth being only 1 cable, and fronted by an extensive bar with 12 to 3 feet of water on it. There is anchorage 1 mile SE. of the river in 9 fathoms, sand and mud, shoaling gradually toward the coast. From Naujan to Polak Bay the coast is steep, and 37 fathoms depth will be found at a distance of 1 mile.

Point Tujud has a large, isolated rock or cliff off its east side, joined to the coast by a rocky spit. Point Taguvan, 1 mile SE. of Point Tujud, has detached rocks off it, with 10 fathoms of water near them.

Polak Bay, open to the NE., is clear of dangers; the depth at the mouth is 35 fathoms, lessening to 9 fathoms at 2 cables from the beach at the bottom of the bay. Point Anahauan, the northeast point, is fringed with a reef to a distance of 3 cables from it, with 2½ to 5 fathoms at its edge. The bottom of the bay is a sand beach, 2 miles long, between two rivers. Fresh water can be obtained in boats from the eastern river.

Point Dumali, the eastern extreme of Mindoro Island, and formed by the termination of the shoulder of Mount Dumali, is high, peaked, and easily recognized by a great white patch 400 feet above the sea. The soundings are 49 fathoms off the point and 37 fathoms at less than a mile from the rounded coast to the southward.

Directions for Verde Island Passage.—After rounding Cape Santiago at the distance of a mile, SE. by E. ¼ E. is a good course until abreast the south point of Marikaban Island, and thence to pass between Verde Island and Point Makoto, in Luzon. Verde Island can also be passed on the south side, as the ledge of rock on the southeast point of Verde does not project more than a cable's length, and the northern Bako is

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clear at a short distance; but the north channel is generally preferred.

When the northeast point of Verde Island is passed, a course SE. ½ E. will lead 1 mile east of the northern Bako islet and, if continued for 40 miles, will pass 4 miles NE. of Dumali Point; thence a course S. 8° E. may be steered to pass down the west coast of Panay.

EAST COAST.

From Point Dumali south, as far as Pinamalayan River, the shore is steep-to; from there on to Point Dayagan the coast is clean and consists of sand beaches which may be approached without danger to within a mile, and vessels can anchor anywhere along it, sheltered from westerly winds, in 4 fathoms at a distance of 2 miles and in 3 fathoms at 1 mile. In the elbow of the coast NW. of Point Abongabon, off the river Masi, there is excellent anchorage for all vessels in southwest gales, in 4 to 7 fathoms, sand. A reef of rocks awash at low water extends 2 cables out from the river. The charts do not show many soundings about this coast.

Point Dayagan is flat and sandy, steep-to and clean, with 4 and 5 fathoms depth at 1½ cables from it.

Point Tiklin, or Lagaoin, 4½ miles SW. of Point Dayagan, is flat and sandy; at less than ½ mile ESE. of it there is a bank of rocks of 1 cable extent, uncovered at low water, with 3¾ fathoms at its edge. One mile farther out to the SE. there is another bank, of 3 cables extent, awash at low water, with 4 to 8 fathoms at its edge. The channel between these shoals has 15 fathoms in the middle.

Mansalai Bay is small but well sheltered, with good holding ground. Vessels of all sizes can anchor in it, sheltered from all winds except the SE. The best anchorage in the northeast monsoon is in the north of the bay, in 7 fathoms, mud, at 2 or 3 cables from the shore. The town of Mansalai is small, of 300 persons. Water can be had from a rivulet, but with difficulty, as boats can not enter.

Directions.—In coming to this anchorage from the north, do not bring Point Dayagan to eastward of north until the entrance of the bay is made out to the west, in order to clear the Lagaoin Banks, which partly uncover at low water. In entering the port, care must be taken not to approach the north shore, which is bordered by a reef. There is a depth

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of 5 fathoms in the middle of the port, and in the southern part 1 to 3 fathoms, sand, at 3 cables from the shore. On the north coast of the bay there is a hill of some height with two remarkable peaks, which serve to mark the port on coming from the south.

Point Mansiol is wooded, and can be distinguished by the two islets near it to the ENE., both surrounded by rocks. South of the point is a little bay in which coasters can anchor in 5½ fathoms.

Buyallao Island is 1½ miles in extent, NW. and SE., of regular height, densely wooded, and fringed with rocks on its northwest side to 1 cable distance; two sharp-pointed rocks are at its northeast end.

Point Buyallao is of peaked rocks, covered with trees, with little hills in the interior by which it may be easily distinguished. It is clear, and has a depth of 8 fathoms at its sides.

Soguikai Bay is bordered with steep beaches, near which are rocks; the depth is 7 to 18 fathoms at 1 cable from the shore; small vessels can anchor, in case of necessity, in one of the creeks in the bay.

Soguikai Island is low and surrounded with a reef; the passage between this island and the coast has 15 fathoms. There are rocks to the NW. of the island.

Point Pandan is rounded and of middling height; a reef advances 1½ cables from it, with 5½ to 7 fathoms, rock, at its edge.

Tambaron Island is safe and steep, and separated from Pandan Peninsula by a channel ½ cable wide and 8 fathoms deep, rocky bottom.

Masin Island is also safe and steep, except on the south side, off which there is a reef. On the west side there is a little bay where coasters can anchor.

Bulalakao Bay offers shelter from all but southerly winds; it has 23 fathoms at the entrance, and 12 fathoms in the middle, shoaling to 4 fathoms, sand, near the sand beach at the head, where three rivers enter, near the village of Bulalakao. The east coast of the bay is covered with trees, and on that side there is a little cove named Laurigau, sheltered from all winds, with a depth of 13 to 16 fathoms, mud. No supplies can be obtained at Bulalakao.

The islets Alibatan, Silat, and Aslom are surrounded with rocks. The passages formed between them, and with the coast

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of Mindoro, are clear and deep. There is a little anchorage for coasters between Aslom and the coast of Mindoro.

Point Burankan is free from danger, and can be passed close-to.

THE SEMIRARA ISLANDS form a group of eight islands, all surrounded by reefs.

Semirara, the largest of the group, is hilly, about 512 feet high at the highest part. The west coast includes several little bays almost entirely obstructed by reefs, on the edge of which are depths of 4¾ to 13 fathoms; and off the town of Semirara, which stands on the top of the hill facing the largest bay, the anchorage is very bad, even for coasters. The east coast is bordered by a reef, which extends about a mile from the northeast part of the island; on coming from the north this coast of the island must not be approached within 3 miles until the town of Semirara bears full west. There is anchorage at the south of the island in 5 to 8 fathoms, sand, during the northeast monsoon. Good coal for steaming purposes was found on the island by Captain Villavicencio of the Spanish navy.

Libagao Island is small, 410 feet high at its northern part, while the southern part is low and sandy, terminating in a reef which grows out more than a mile.

Nagubat is small and flat; at 1½ miles to the eastward is a shoal of 4¼ fathoms which appears to unite with the island. The channel between Nagubat and Libagao is deep, as well as that between Nagubat and Semirara; vessels can pass at 1 cable from the south part of Nagubat.

Kaluya is 623 feet high at the south part; there is a bay on the west of the island with low shore and sandy beach, on the northeast part of which there is anchorage in 5½ fathoms, with the north part of the bay bearing N. 27° W. and the south point S. 6° W.

Sibaton is separated from Kaluya by a channel of 3 fathoms, which appears practicable for very small craft. It is 111 feet high and unsafe to approach.

Sibolon, 148 feet high, is also unsafe to approach.

Sibai is 213 feet high; its northwest point rises to a peak and is clean, and its north coast can be passed at ½ mile distance, but the west side is unsafe.

ISLANDS EAST OF MINDORO.—Maestre de Campo Island, lying SE. 11 miles from the southeast shore of the lofty promontory formed by Mount Dumali in Mindoro, is of circular

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form 3½ miles in diameter, high, mountainous, and thickly wooded, with very steep shores, only affording anchorage to small craft. The summit of Maestre de Campo, when seen from the eastward, appears like a ridge with three distinct hillocks, estimated to be 700 feet high.

Port Concepcion, on the southeast side, is the principal anchorage; it is very small but deep and easy of access, of 5½ cables width at the mouth between Point San Martin and Point Fernandez, and of the same extent NNW.; a tongue of land advancing 4 cables SSE. from the head of the port divides it into two bays; in the westernmost of these there is anchorage for very small vessels in 8 to 10 fathoms, sand and mud, in front of the town of Concepcion. The interior of the port is lined by a rocky steep reef.

Dos Hermanas are two flat islets of rock, 138 feet high, separated by a deep channel 1¼ miles in width; the shores are clear and steep.

Banton Island is 1,918 feet high, peaked and rugged, and steep on all sides except the SE., which is bordered by a reef of small extent. It presents some shallow bays, and on the northeast part is a village of some size, near which is anchorage for coasters in 5 fathoms, with a hawser to the shore to prevent swinging. On the west coast there is good anchorage in the northeast monsoon in 7 fathoms, sand, between the northwest point of the island and a tiny islet south of it. Good scope of chain would be required, as the anchor is liable to slip off the steep bank.

Bantoncillo Islet, 256 feet high, lies SW. 3 miles from Banton. It is ¾ of a mile long, north and south, and very narrow; off its southern end is a pinnacle rock. There are 73 fathoms off the northwest end, and off the southeast end 45 fathoms, almost touching the extremities of the island.

Simara Island is 870 feet high, flat-topped and well cultivated, and can be approached with safety. There are 40-fathom soundings at ½ mile from the northern end; on the south side there is a village with a church and fort, but there is no anchorage off the island.

Tablas Island is mountainous, and on its northern extremity is the peak Cabezo de Tablas, 2,405 feet high; generally the coasts are clear and steep-to. Off the north end are two rocky islets, distant 1 cable from the coast; the larger one is clear and steep, the smaller one has rocks around it,

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close to. On the west coast there are anchorages for small craft in the northeast monsoon, and on that side is the sheltered port of Loog. From Point Bagulayan, the southwest point of a wide bay on the west coast, a reef projects a mile to the northward; the chart shows 10 fathoms near its end.

Port Loog (ch. 37, p. 194) is the only shelter on the west coast of Tablas during the southwest monsoon. The port is about 4 miles in extent, north and south, and three miles east and west. The shores are steep, and the depth of water is from 11 to 20 fathoms, mud. The entrance points are more than a mile apart, but the channel is reduced to the width of ½ mile by a reef that projects to a distance of 6 cables from the northern point. Within and before the mouth there is a shoal of rock 4 cables long, NE. and SW., and 2 cables wide, steep-to, with depths of 5½ to 9 fathoms on the south side. The town of Loog is on the north shore.

Anchorage.—During the northeast monsoon vessels of all sizes can anchor on the north side of the harbor, before the town, in 9 fathoms; and during the southwest monsoon, on the south side at 3 or 4 cables from the shore in 15 fathoms, mud.

In entering Port Loog the southern point of the entrance should be made for, and sailing vessels working in should be conned by sight.

Water.—Near the northern side of the town of Loog there is a river of good water in which light boats can enter.

Point Kabalian, the south point of the island, ends in a sand beach, with 11 fathoms at the edge and no bottom, with 100 fathoms at a short distance.

Point Kalaton, on the southeast coast, is formed by a high bluff, which advances 1½ miles from the coast, with soundings of 5½ to 12 fathoms alongside it. In the bay formed by the point and the islet Kabahan to the southward there is anchorage in 5½ to 11 fathoms, with Point Kalaton bearing NE.

Shoal.—At 5 miles north of Point Kalaton and 2½ miles from the coast near the town Lanan, there is a shoal of sand and rock 1½ miles in diameter, with 5½ fathoms on the shallowest part, and no bottom with 100 fathoms near the eastern edge.

Tambolon Bay is the name of the wide bay to the southward of the Cabezo or northeast point of Tablas. In this bay

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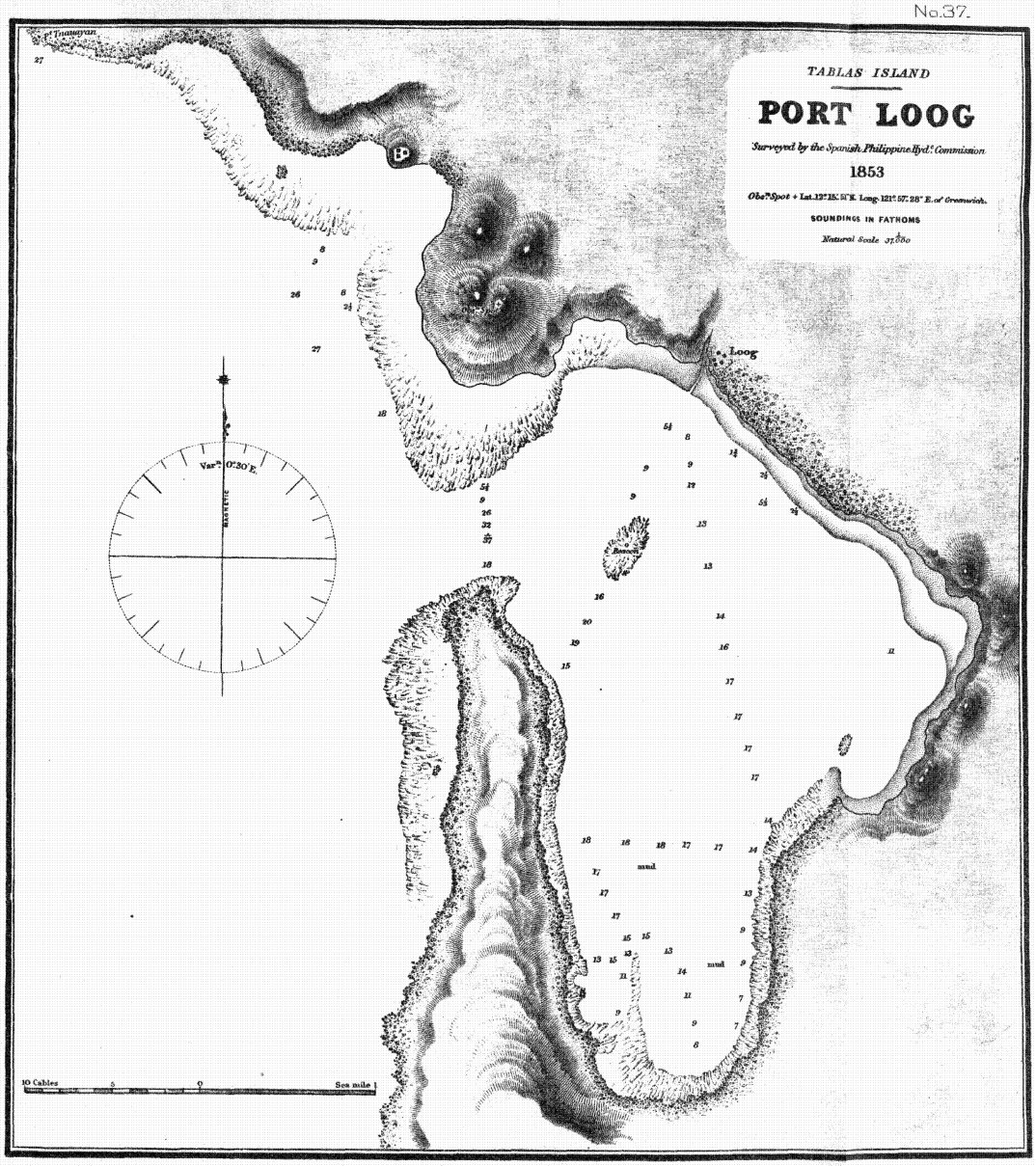

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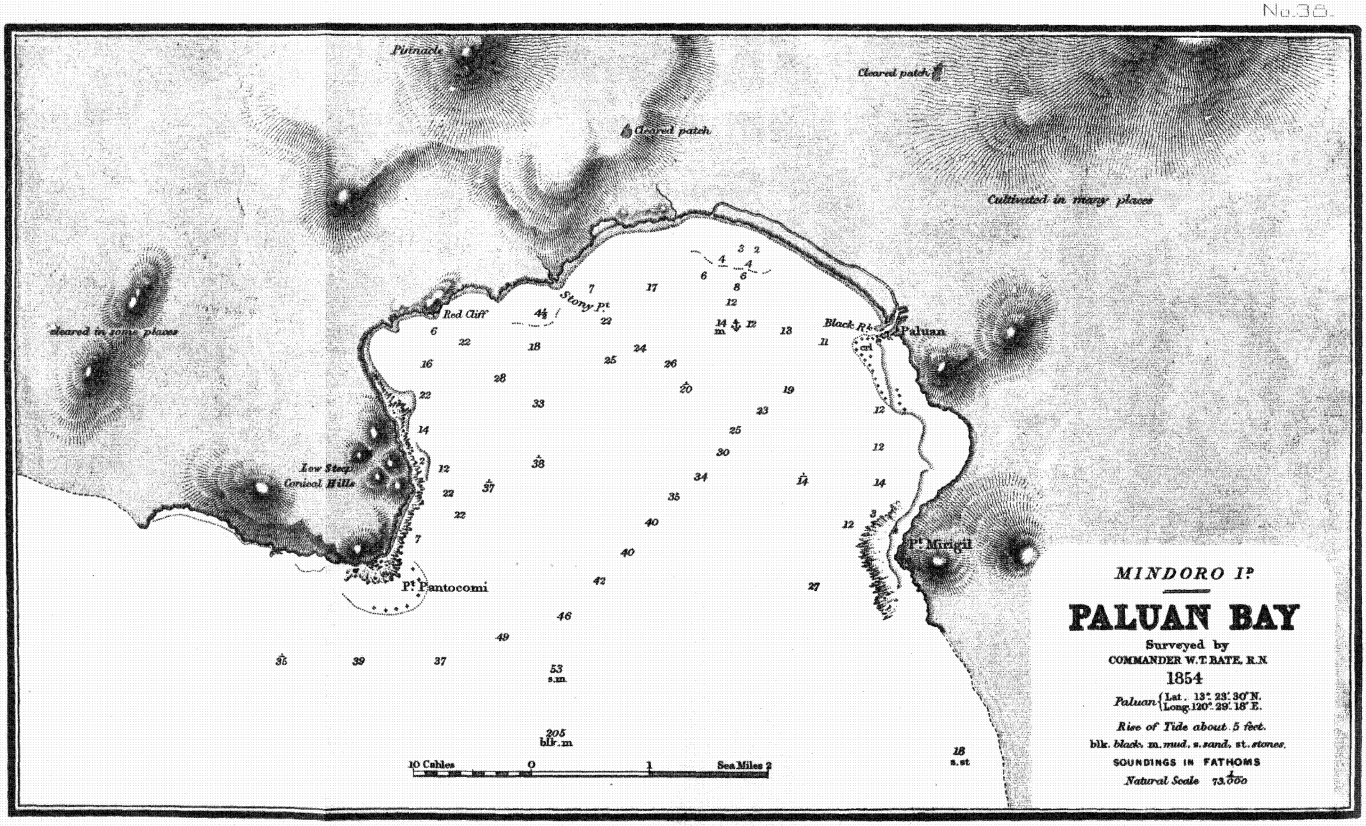

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vessels can find shelter in the southwest monsoon, but the water is very deep. There are 8 fathoms very near the coast, bottom fine sand, with the western entrance to Port Romblon bearing E. by S. The shore is steep, bordered by rocks very close to it. From the southern part of the bay, 4 miles from the northeast point, a ledge of rocks juts out to a distance of ¾ of a mile.

The channel between the northeast point of Tablas and the islands Romblon and Cobrador is 3½ miles wide and free from danger. It is the passage usually taken from Verde Island Passage to Jintotolo Channel.

Karabao Island is hilly, and rises to a peak 718 feet high. Its shores are clear and steep; the rocks that fringe it are very close; on the east side there is a sand beach where, in need, vessels can anchor in 5 fathoms.

The channel between Karabao and Borakai is clear, but the tide streams are very strong. The flood makes to the east and the ebb to the west.

Borokai Island lies 1 mile to the northward and westward of Point Potol in Panay, and extends 4 miles NNW.; the summit is 436 feet high; the shores are safe. On the west side there is 5½ fathoms, where anchorage can be had if required; the channel between it and Potol is clear, but there are rocks on both sides of it, and the tide streams rush through it with great force.

WEST COAST.

The west coast of Mindoro Island has no soundings off it excepting in the bays, or within 1 or 2 miles of the shore in some places. In the interior double and treble chains of mountains extend through the island, and some low points of land project from them into the sea.

Cape Kalavite, the northwestern extremity of Mindoro, is in latitude 13° 26′ north, longitude 120° 18′ E. Between it and Paluan Bay there are soundings near the shore, which is bold to approach; for the few rocks interspersed along this part of the coast, adjacent to the cape, lie close in, and one of them, just above the water, has a sandy beach adjoining, upon the projecting part of the coast that forms the cape. Over this point stands Mount Kalavite, which is of regular sloping form, and visible at a great distance in clear weather.

Paluan Bay (ch. 38, p. 195) affords excellent shelter in the northeast monsoon, and is also a convenient place for vessels

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to obtain supplies when passing through Mindoro Strait. The bay is 5 miles wide at entrance, of a semicircular form, running back 3 miles in a northerly direction. There are no dangers in it. Reefs, dry at low water, extend ¼ of a mile from either point of entrance, having deep water close to them. The soundings at the entrance are from 45 to 50 fathoms, ½ mile to the southward of which they increase to 200 fathoms.

The best anchorage is in the northeastern extremity of the bay, in 14 fathoms (to which the water suddenly shoals from 20 fathoms), less than a mile from the beach, and west from a small isolated head, upon which a hut is erected. There is a black rock close to it, standing a few yards in front of a sandy beach, which shows in good relief. The bottom consists of a black tenacious mud, from which it is difficult to extricate the anchor after it has been down a few days.

Water.—A small river disembogues immediately on the north side of the cliff, where good water can be obtained with facility; and on the beach there is plenty of driftwood. The coral projects ½ mile from the entrance of the river, and has 10 and 12 fathoms close to its edge.

Caution.—Care must be taken when working into Paluan Bay, for the squalls come violently off the high land, are very sudden, and at night do not give the least warning.

Tubile Point has on its southern side two islets, which, as well as the point, are very steep-to, with 32 and 40 fathoms outside them and very close to them. From the point the coast trends eastward, forming a bay full of rocks.

Mamburao Reef extends about 3 miles to the southward, and has a depth of 1 fathom over it at low water. Anchorage can be obtained opposite the mouth of the Mamburao River, to the westward of the reef, in 4½ fathoms, mud and sand, with shelter from north and east winds.

The coast from Mamburao Reef trends southeastward to Talabasi Point, and is low, with sandy shores. From this point, which is surrounded by a rocky shore, the coast continues to the southeast to Sablayan Point.

The two islands of Pandan are situated to the north of Sablayan Point. Protection may be obtained during the southwest monsoon by anchoring close to the eastward of the southern island, in 7 to 14 fathoms, mud. In order to reach this anchorage, pass to the northward or between the islands.

Sablayan Anchorage (ch. 39, p. 196) has a total width of 8

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cables between Sablayan Point and the coast to the eastward, but the available space is reduced one-half by reefs on both sides, and the northern part is filled by a reef inclosing a lagoon 4 to 5 fathoms deep, to which there is a narrow entrance. Anchorage may be obtained in 12 fathoms, with the vantay on Sablayan Point bearing west, at a distance of ¼ of a mile from the beach under the vantay, and in 9 fathoms, farther in, with the vantay bearing W. by S.; but great caution is necessary, as the reefs do not show well. The inner lagoon is only fit for the native coasters.

Sablayan town, on the western side of the anchorage, has a church and school, but the padre is the only person in the town who can speak Spanish. Fowls, fish, and cocoanuts are obtainable in small quantities. Water can be obtained from wells dug through in the coral.

The coast from Sablayan Anchorage trends in a SE. by S. direction for 35 miles to Mangarin, and is generally low, with sandy shores. There are high lands a considerable distance in the interior, and extensive plains to seaward.

Dongon Bay, situated 7 miles to the southward of Sablayan Anchorage, lies to the eastward of a low, sandy point of the same name. Vessels can anchor here in front of the low, sandy shore, protected from northerly winds.

Iriron Bay, about 8 miles SE. of Dongon Bay, affords good anchorage during the northeast monsoon; a village is situated on the north side of a small river, but no supplies could be obtained.

Lumintau Point lies 6 miles south of Iriron Bay; a shoal only 2 or 3 yards in extent is reported to lie ½ mile NW. of the point.

Mangarin Bay, 13 miles SE. of Lumintau Point, and north of Ilin Island, is sheltered from all winds by Ilin Island and the long peninsula Mangarin Point, which terminates in a sandy spit. At the entrance to the bay, off the spit, the depth of water is 4 or 5 fathoms, but the interior is very shoal, and the town of Mangarin, 1½ miles NE. of the spit, is only accessible to boats. Few supplies are obtainable, and those are very dear; good water is not obtainable; the climate is unhealthful, because of the marshy surroundings.

Donjon Bank, which lies 4½ miles W. by S. of Mangarin Point, is a coral bank, rather more than ½ mile in length; the center part uncovers at low water; the remainder is covered

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by 2 fathoms water. At $\frac{1}{3}$ of a mile SSW. of the southern edge of Donjon Bank the chart shows the northern head of another bank, the extent of which to the southward and westward is not known. The lead gives no indication of approach to these banks, there being no bottom with 15 fathoms at $\frac{1}{4}$ of a mile to the westward.

Manadi Bank lies $2\frac{1}{4}$ miles E. by N. of Donjon Bank, and is similar to it. Between Manadi and Mangarin Point there is a third bank not named on the chart.

If proceeding to Mangarin Bay from the NW., a safe channel will be found by passing to the north of Donjon Bank and south of Manadi Bank, anchoring the moment the channel between Ilin and Mindoro is fairly open.

Ilin Island, fronting the southwest part of Mindoro, is 10 miles long, NNW. and SSE., with 4 miles greatest width; it is wooded and hilly, the highest summit on the northern part of the island being about 850 feet above the sea. The northern, eastern, and southern shores are clean and steep-to, but from the northwestern part a reef projects more than a mile out, and off the end of this reef there is a detached patch with 2 fathoms on it.

Clearing marks.—To clear the reef off Ilin to the westward, the west coast of Ambolon Island must not be brought to bear west of south; and to clear it to the SW. the southwest point of Ilin should not be shut out by the western point.

Anchorage.—The town of Ilin is in latitude 12° 15′ N., 1 mile to the northward of Ambolon Island. Good anchorage will be found in 10 fathoms off the reef that borders the coast, with the southern large house of the town bearing east, about $\frac{1}{2}$ mile from the shore. A channel, staked by the natives, leads up to the settlement, where a stream delivers itself into the sea; but much sweeter water was found trickling over a cliff just round the town point, to the southward, to which the boats had easier access, and from which the *Samarang* was readily completed with water. Of the other source, a most excellent run of water was found, but it is used for all purposes by the people, and difficult to embark, excepting at high tide, owing to the shore being dry at least a cable from the mouth of the stream. Fowls, eggs, grain, and vegetables were procured at reasonable prices.

Ambolon island is 3 miles long, north and south, and 2 miles wide; it is about 550 feet high at the northern part,

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and surrounded by a very narrow fringe reef always visible, and easily avoided. It is almost, if not quite, divided by a swampy lagoon which forms a small harbor to the SW., with Kukurrayan islet at the entrance.

Bank.—A circular, rocky bank, ¾ of a mile in diameter, covered by 2 fathoms water, lies ⅔ of a mile SSW. of the south point of Ilin, having a rock above water at its southern part. The southwestern side of this shoal has not been sounded; care must therefore be taken in rounding it. Belcher gives the following marks for the southern part of the shoal: "The tail of the shoal is exactly on the line of contact of Ilin and Ambolon extremes at the moment that Ambolon outer point shows clear of the smaller semidetached island (to the southward)."

The strait between Ilin and Mindoro is free from danger, and the *Samarang* passed through it; but owing to the prevalence of light airs, the passage should not be attempted without a fair wind. Caution must be used when entering Pandarochan Bay from the northward by this strait, for the spit off Mindoro shoals suddenly from 10 to 3 fathoms. The channel should therefore be kept well open, borrowing rather on Ilin until Garza Island is nearly locked in by the eastern point; then haul easterly, anchoring in 12 fathoms.

Lalauigan or Gomez Bay, on the Mindoro coast about the middle of the strait, is only fit for coasters, to whom it affords anchorage in 1½ fathoms.

Pandarochan Bay, formed between points Burankan and Ilin, the south extremes of Mindoro and Ilin islands, is safe throughout, affording excellent anchorage and shelter from the northerly winds at the mouth of the strait in 10 or 12 fathoms. Garza Island and its extensive shoal also offers shelter from strong easterly gusts.

No inhabitants were noticed in Pandarochan Bay.

Garza Island, which lies 2½ miles from Burankan Point (the eastern point of Pandarochan Bay), is low and sandy and covered with trees; it is surrounded by a rocky reef which extends 2 miles to the southward, covered in places by only 2½ fathoms of water. There is a small sandy beach on the north part of the island, near which anchorage can be had in 8 to 5 fathoms depth at a distance of ½ cable from the beach.

Dominga Shoal, consisting of sand and rock, on which the *Dominga* sounded on the 22d of May, 1888, while on a voyage

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from Paluan to Lalauigan, and obtained depths of 8 to 9 fathoms, is reported by the natives of Ilin to have a least depth of 3¾ fathoms. It is stated to be 2 miles in extent and to be situated with the summit of Ambolon Island bearing NW. ½ N., and the northern point of Semirara E. by N. ½ N.

MINDORO STRAIT.—This wide strait, separating the Calamianes from Mindoro Island, is one of the most frequented channels for vessels which leave the ports of China for India toward the end of April and in May, and at all times of the year from the ports of China to Australia.

It is divided into two passes by Apo Reef.

APO REEF was examined by the surveying ships *Discovery* and *Investigator*. The position of the islands to the westward was determined by the *Samarang*, and the extent of the bank was verified in 1872 by the *Mindoro*. From the northern extremity the shoal extends SE. by S. 7½ miles, where it forms a very narrow spit or east point; from the east point the southern extreme bears S. 35° W., distant 5½ miles, and between the two points there are several gaps in the shoal having 9 feet water. On the western side there are two islands; the western one is the larger, being about ½ mile in diameter and covered with trees; white beaches line its northern and eastern side, and a surrounding reef projects about ½ mile. This island does not appear to be connected with the Apo Shoal, but about 1½ miles ENE. of it there is a small island formed of barren black rocks on the southwest part of the shoal. From the center of the large island the north point of the shoal bears N. 24° E., distant 7 miles; the eastern point N. 81° E., 8 miles, and the south point S. 56° E., 6¾ miles.

The whole extent of the shoal is 10 miles from its north to the south point, and nine miles from its east point to the western part of the large island. There are two high black rocks NE. of the small island, which may be seen about 6 miles off, and the islands in clear weather are visible from an elevation of 20 feet, about 10 miles. At low water many small rocks are dry on the shoal, particularly along its north side.

If intending to pass between the coast of Mindoro and the Apo Shoal in the night, keep about 6 miles off Pandan Island, as the eastern point of the shoal is narrow, and should the wind be westerly it would not readily be perceived, nor would there be breakers to make known the approach to danger.

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While examining the Apo Shoal, the *Discovery* and *Investigator* were frequently near it without obtaining soundings, and the boats found it very steep-to in all parts. Land and sea breezes were experienced here in March, the latter from W. and SW., with the tide or current setting northward; land and sea breezes prevailed also to the westward of the Calamianes.

Apo East Pass is 14 miles wide between Apo Reef and the nearest part of the coast of Mindoro; with the exception of Discovery Bank the pass is quite clear.

Discovery Bank is 1¼ miles long, north and south, and very narrow; the least water on it is 9 fathoms. The sea does not break on the bank, nor is it marked by any discoloration of the water. From the center of the bank the northernmost of the two small Pandan Islands off Mindoro bears NNE. ¼ E.; Mount Kalavite N. by W. ½ W.; and Apo Islet E. ½ S.

Saraceno Bank appears to be 1¾ miles in extent from north to south, and the same from east to west, with a least depth of 14 fathoms. The shallowest part is of red coral, but as the depth increases the character of the bottom alters, and at 50 fathoms it consists of coarse sand and gravel.

From a position in 16 fathoms, Mount Ilin bears N. 61° E., Mount Ambolon, N. 70° E., and the south point of Ilin E.

Leonidas Shoal appears to be 3½ miles long, north and south, and 2½ miles wide from east to west, and to be composed of coarse sand, with shells and coral. From the position of least depth in 8 fathoms, Mount Ambolon and Mount Ilin are nearly in the same line, N. 36° E., the south point of Ilin N. 67° E., and Mount Tundalara S. 88° W.

Apo West Pass, between Apo Bank and Calamianes Island, is 19 miles wide between Apo Shoal and Tara Island—the northernmost of the Calamianes; but Hunter and Merope shoals lie in the middle of the northern entrance.

Hunter Shoal, on which the sea breaks, consists of a rocky ledge, about 2 cables in extent, with 12 fathoms on it, and a patch of 8 feet on its south extremity. The shoal is surrounded by a bank, the depth over which varies between 24 and 65 fathoms. From the shoal, Mount Kalavite bears N. 15° E., and Apo Islet E.

Merope Shoal, on which the sea breaks, lies 5½ miles NE. of Hunter Shoal, and consists of a ridge 1⅓ miles in extent north and south, and ½ mile wide. It is covered by 2¾ to 9

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fathoms, and no bottom with 90 fathoms within ¼ of a mile. From the shoal, Mount Kalavite bears N. 11° E., Apo Islet S. 67° E., and Mount Tundalara, in Busuanga, S.

Current.—During the Spanish survey of these shoals, 1872, a current to the SE. of 0.6 miles an hour was observed.

THE CALAMIANES are a group of high islands lying between the northeast end of Palawan and Mindoro, and extending between the parallels of 11° 39′ and 12° 20′ N., and the meridians of 119° 47′ and 120° 23′ E. Busuanga (ch. 40, p. 202), the largest island of the group, is about 34 miles in extent NW. by W. and SE. by E., and 18 miles broad. It is very irregular in form, being indented with numerous deep bays. The islands and reefs which front its northeast side form the western side of Northumberland Strait.

These islands form, with the northern part of Paláwan and the Cuyos Islands, a province, the capital of which is at Port Tai Tai. The climate of these islands is in general hot and unhealthful. Intermittent fevers and cutaneous diseases prevail, attributable, in all probability, to the great moisture and the insalubrious quality of the drinking water. All these islands are, generally speaking, hilly and broken. The industry of the locality is in collecting Salanganes (edible birds' nests), honey, and wax; but cultivation is not practiced to any great extent. The forests produce good timber for building or cabinet work.

The west coast of the Calamianes, Linapakan, and its surrounding islands, and the coasts of Paláwan, are described in the China Sea Directory, Vol. II.

Islands and dangers northward and eastward of the Calamianes.—The following description is from the Spanish Derrotero, 1879, and from Captain Maclear, H. M. S. *Flying Fish*, 1885.

Kolokoto, or North Rock, is the northwestern and highest of four large black rocks, which appear as one when seen S. 54° E. It was estimated to be 100 feet high, and the next largest to it 60 feet high. Kolokoto is the northernmost of the islands which lie on the north side of Busuanga, and may be seen 13 or 14 miles from the deck.

Soundings.—The charts exhibit no soundings within 20 miles of the west side of Kalamion (ch. 33, p. 182), but beyond that distance are irregular soundings, 19 to 54 fathoms. In latitude 11° 52′ N., longitude 119° 26′ E., is a patch of 9 fathoms,

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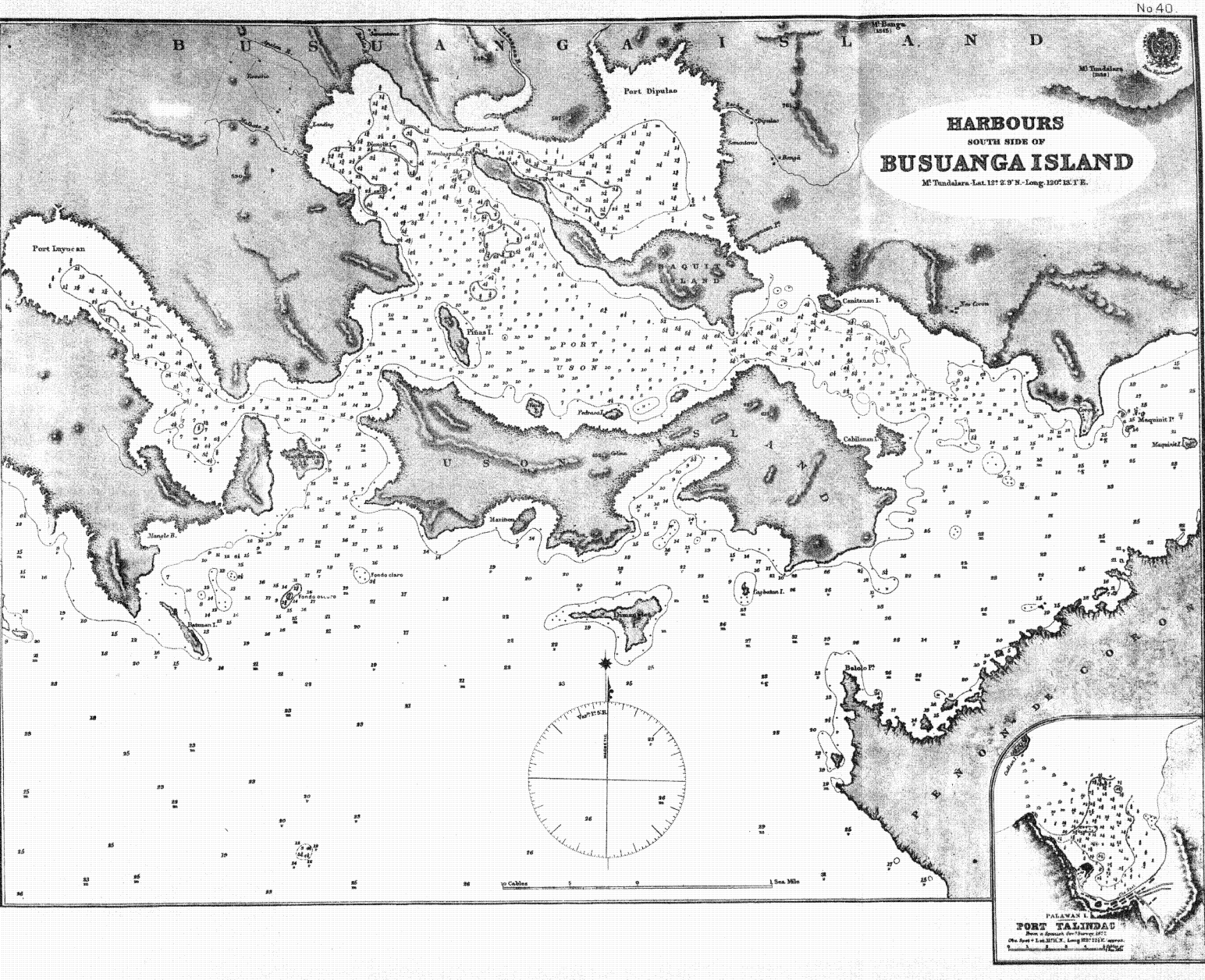

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with other patches, 12 to 15 fathoms, within a few miles of it. The soundings near the islands westward and northeastward of the Calamianes have been given with the description of those islands; they are also very irregular, 17 to 30 fathoms, with patches of 5 and 8 fathoms, and it would appear necessary to be on the lookout for shoal water when navigating in this locality.

Near North Rock the soundings to the northward are 40 and 50 fathoms, and the same depths between it and Busuanga, on a muddy bottom.

A patch of 5 fathoms is shown on the chart 14 or 15 miles to the northward of the north point of Busuanga, in about latitude 12° 35′ N., longitude 119° 52′ E. The *Flying Fish* anchored on this bank, which is of small extent, and sounded over it with boats, but found nothing less than 10 fathoms, with 25 to 30 fathoms around; and no bottom with 250 fathoms close to the northward, which would indicate that the patch is on the northern edge of the bank on which the Calamianes are situated.

Dimipak, or High Island, lies about 2 miles to the northward of the north point of Busuanga. It is a small island, not quite 2 miles in extent, and the channel between it and Busuanga does not appear to be free of danger, as some rocks were seen above water eastward of the island.

About a mile northwestward of Dimipak Island are rocks above water, one of which, named Sail Rock, 140 feet high, is very remarkable; and 1¾ miles northwestward of this lies a large black rock, named Northwest Rock or Dichilem. When passing between these the *Discovery* had 38 fathoms, and about 2 miles NNE. of Northwest Rock passed over a coral spot in 8 fathoms.

Dumunpalit (Turret) Island, bearing S. 50° E., 7¼ miles from North Rock, is 816 feet high, small and rocky, having several detached rocks about it, and a remarkable hummock on its southwest point, somewhat like a turret.

Islands Northeast of Busuanga.—Nanga Islands, lying 15 miles ESE. of North Rock, are two small wooded islands which have sandy beaches, and about 1½ miles to the NNE. of them there is a black rock above water. The largest of these islands is 344 feet high. The chart shows them to be surrounded by a reef extending nearly a mile from them.

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Kamanga Islands, south of Nanga, are about 400 feet high, small and steep-sided; the chart shows them to be surrounded by a reef.

Tara Island, when seen from the northward, shows a triple summit to its northwest end; while its southern part looks like a separate island, saddle-shaped. From the eastward the island appears of uniform height. The southern summit is 730 feet high, and the northern one 560 feet. On the southwest side there is good anchorage in 10 fathoms in a gap in the reefs which extend westward from the island, in some places to a distance of ½ mile. From the anchorage the following bearings were taken: Kokonongon Hill S. 69° W.; Kamanga Island N. 80° W.; and the western point of Lagat Island S. 7° W. The island does not appear to be permanently inhabited; in March, 1885, it was occupied by parties from Busuanga, burning the grass and digging cassava.

Lagat is a small island 334 feet high, surrounded by a reef with a narrow passage between it and the reef off the south end of Tara.

Soundings.—A patch of 3 fathoms lies west 1½ miles from the south end of Tara; the soundings about the northern end are irregular; a patch of 6 fathoms lies between Tara and Nanga; and a patch of 9 fathoms lies N. ½ W. 8 miles from the northern end of Tara.

Botak Island, 800 feet high, is fairly well cultivated. Off its northern end there is a queer pin-shaped rock, and off its southern end are some sharp-pointed rocks. The vicinity has not been sounded.

Kalanhayuan Island, flat-topped, 500 feet high, is connected with Botak by a reef.

Lubutglubut Island, 660 feet high, is very bold to the southward, and appears inaccessible; north of it a reef extends to the distance of 1 mile, with large rocks above water. A group of rocks without name on the Spanish chart, lies south 1½ miles off Lubutglubut. The highest of the group is about 380 feet above the sea. The vicinity has not been sounded.

The East Coast of Busuanga is formed by a range of hills running in a NNW. and SSE. direction, having an average height of 1,200 feet. The most conspicuous among them, seen from the northward, is a three-headed peak, 1,880 feet high, in latitude 12° 6′ N., longitude 120° 16′ E. Mount Tundalara has a smooth summit with a small knob on it, and is in

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latitude 12° 02′ N., longitude 120° 13′ E.; it can not be distinguished from the northward. Over Kokonongon Point there is a conspicuous cone, 1,300 feet high.

Minanga Bay is almost filled up by islands and shoals. From Point Alonon a bank of coral extends 3 miles to the NE., with soundings of 5½ to 12 fathoms over it, shoaling toward the coast.

Port Borak has not been surveyed; it is reported to be very narrow, but sheltered by the islands Dinaran and Matayan; and to afford anchorage in 2½ to 9 fathoms.

Dinaran Island is saddle-shaped; the two summits are about the same height, 580 feet above the sea; it is surrounded by a reef, which extends to ½ mile on all sides, except the western, which is steep-to and clear; a rocky shoal lies 1½ miles to the SE., with the island Matayan in the middle of it; this shoal is 2½ miles in extent, north and south, and almost joins the reef that borders Dinaran Island.

Dibitak Island is about 300 feet high.

Koron Island is rocky and precipitous, about 1,200 feet high, and nearly the same height from north to south. The south end terminates in a sharp, steep point, named Point Kalis, which can be passed close to. About the middle of the eastern coast there is a shoal of sand and coral, covered by 5½ fathoms; and another shoal, of 3½ fathoms, lies midway between Koron and Dibitak.

Koron Strait and Koron Bay are described in China Sea Directory, Vol. II.

Delian Island, situated 3½ miles to the NE. of Point Kalis, is 450 feet high. The shores are steep-to and clean, with the exception of a few rocks close to its southern end, and a reef, of about a cable's extent, on its northeast side. On the west side there is a white sand beach, with a short spit.

Shoals East and Southeast of Calamianes.—Framjee Bank extends about 3 miles in a SW. by W. and NE. by E. direction, and has a general depth over it of 8 to 13 fathoms, and is surrounded by 40 to 50 fathoms. The northwest side is steep.

Magallanes Bank, the southern end of which is 1½ miles N. by E. of Narvaez, is nearly 3 miles long, NE. and SW. From the position of least water, 1½ fathoms, on the northern end, Matayan Island bears N. 28° W., and Point Kalis S. 73° W.

Narvaez Bank, with 4½ fathoms least water, lies with Matayan Island bearing N. 20° W., Point Kalis W.

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Aguirre Bank (ch. 41, p. 206), SE. 17 miles off Delian Island, is 1½ miles in extent NNW. and SSE., and 1 mile wide; the least water on it is 4½ fathoms.

Beta Shoal lies 7 miles S. by E. of the south end of Delian, and is covered by 6 fathoms, with 20 fathoms close around it.

KABULAUAN ISLANDS are a little group to the eastward of Linapakan, composed of two larger islands and several smaller ones. Kabulauan, or Sombrero, is 2½ miles long from NW. to SE., with a hill of moderate height on its northeast point. On the southwest side there is a small bay bordered by a reef, with 4 to 11 fathoms depth. The north side of the island is foul. On the south side there is a rock which appears to be connected with the island by a shoal of 2½ fathoms; at 2 miles west of the island there is a patch of 4½ fathoms.

Nangalao, 4½ miles to the NE. of Kabulauan, is about 2 miles long, NE. and SW., and rises to a central hill about 500 feet high. Two small islets, joined to the south point by a reef, form a bay with 5 to 11 fathoms depth. The channel between Nangalao and Kabulauan has not been sounded; there is an islet in the middle of it.

Kanaron Island, lying SE. by E. 12 miles from Kabulauan, is small, about 300 feet high, and bordered on the north side by reefs and rocks to the distance of 1 mile. Solitario, 40 feet high, lies 5 miles NE. of Kanaron; and Salimbubug, 100 feet high, lies 5 miles NW. by N. of Kanaron.

SULU SEA.—The space included between the Sulu Archipelago to the south and Mindoro to the north, and having the Philippine Islands on the east and Paláwan on the west, is distinguished by the name of the Sulu Sea. Although of great depth, 2,550 fathoms, this sea, which is in connection with the China and Celebes seas, and also with the Pacific by San Bernardino and Surigao straits, has a minimum deep-sea temperature of 50.5°, reached invariably at 400 fathoms. As this temperature in the China Sea is at the depth of 200 fathoms, and in the Celebes Sea at 180 fathoms, and in the Pacific at 230 fathoms, it may be inferred that the Sulu Sea is prevented from freely interchanging its waters with those seas by ridges which do not exceed those depths.

Winds.—In the Sulu Sea easterly winds with fine weather prevail in October, and the northeast monsoon is not established until November. In January and February it blows hardest, but not with the force of the China seas, and it is

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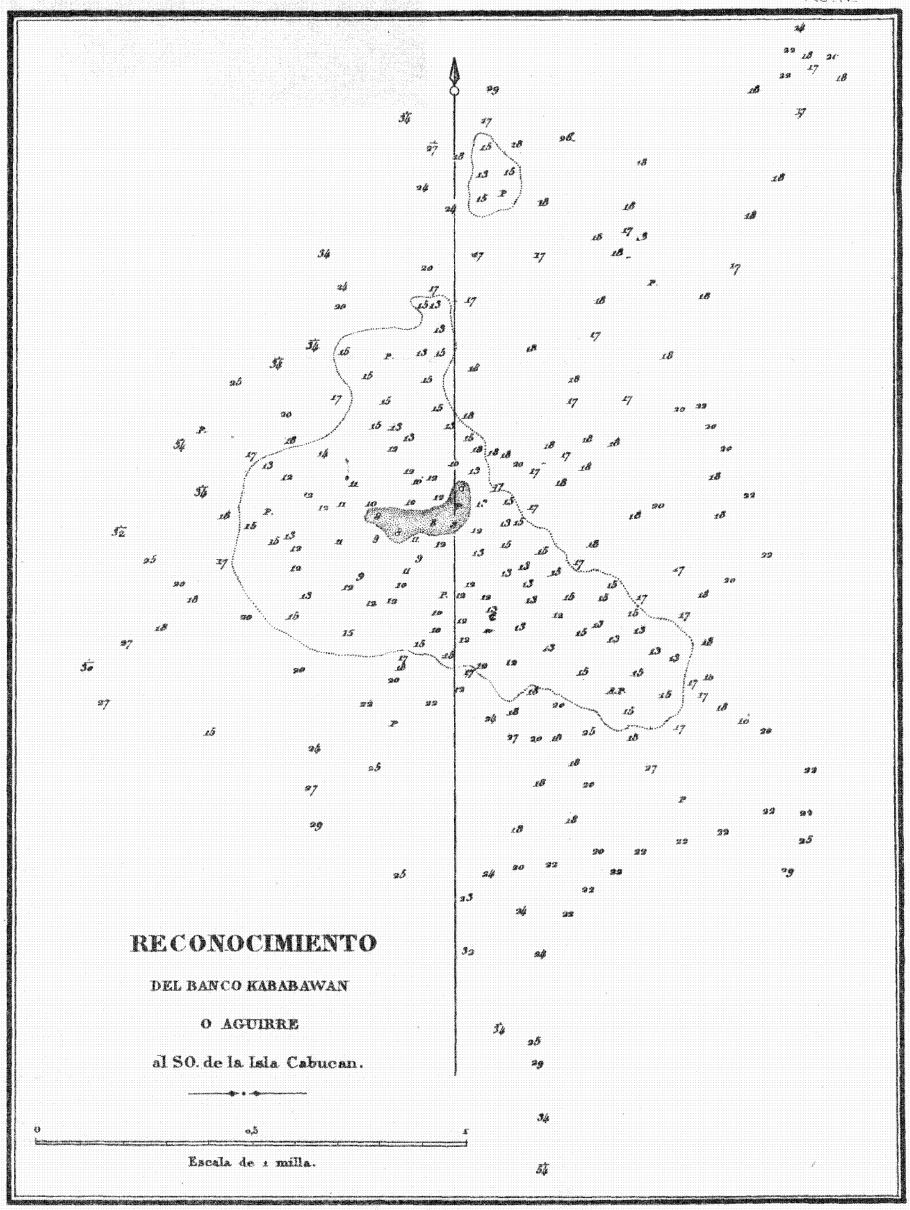

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felt strongest before the openings between Panay and Negros, and Negros and Mindanao. At the end of May southwest winds begin to blow, and in a month become established, to terminate in October, bringing with them a season made up of rain squalls and tempests, which take place principally in July and August. In September a heavy mist hangs about the coast of Mindanao.

In the Sulu Sea the east or northeast monsoon is not a steady, fresh breeze, but often variable. Near Mindanao the northerly winds never blow fresh, and light changeable winds often displace them for several days. This often occurs at the end of January, and it is considered that the same winds prevail from the Sulu Archipelago to Manila.

Cyclones occur occasionally, chiefly at the changes of monsoon, and appear to pass chiefly over the northern part of the sea.

Currents.—During the northeast monsoon the surface drift is with the wind, about ¾ of a mile an hour. In the southern part of the sea there is generally a northwesterly or westerly current in the neaps between Sulu and Basilan, and in the tracks thence to Balábac Strait. In March and April the current sets mostly to the eastward among the Sulu Islands, but it sets to the westward at the same time in the openings of the Philippine Islands to the north of Mindanao.

Observations of currents during the southwest monsoon are too scanty to afford reliable information.

Tidal streams.—Two tidal waves enter the Sulu Sea and passages between the Philippine Archipelago from opposite directions; one from the China Sea through the western openings, the other from the Pacific through the eastern straits, viz., San Bernardino, Surigao, and Basilan. These waves meet in the many channels between the southern islands.

The wave from the China Sea enters that sea from the Pacific by the wide opening between Formosa and Luzon, and passes from north to south along the western shores of Luzon and Paláwan, and through the Verde Island Passage, Mindoro Strait, Linapakan, and Balábac Straits.

The Verde Island stream, after passing south along the coast of Luzon, and deflecting from its waters into the Bay of Manila, continues along the coast to the southward and eastward as far as Point Puñas, where it branches, one stream running to the northeast, round Tayabas Bay, and north and

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east of Marinduque, through Mompog Strait, reuniting with the other branch, which passes southeast, along the Mindoro coast as far as Point Dumali, and then to the eastward, south of Marinduque as far as the Bondog Peninsula, where it meets the flood stream from the Pacific, which has passed through San Bernardino Strait. The northern part of the Verde Island stream, which follows round the bays of Taal (Balagan) and Batanga, reunites with the principal current near Verde Island, producing violent tide rips and eddies in that part of the channel between points Puñas and Escarceo.

The flood stream that enters by Mindoro Strait follows the coast of Mindoro, setting to the southeast (as far as Point Nasog in Panay), part of it continuing around the coast of Mindoro to the northward to Point Dumali, where it meets the stream through Verde Island Passage. The rest of the stream divides at the northwest point of Panay Island; one branch flows along the north coast of Panay, past Point Bulakan and the Gigantes Islands, to Point Bulakaki, the north point of Cebú, where it turns to the southward and meets the stream from the Pacific through Surigao Strait about 6 miles south of Kamotes Islands; it also flows into Iloilo Strait and Tañon Strait, in both of them meeting the flood which has entered from the southward, on the parallels of the north end of Negros and of Tagas, respectively.

CITIES AND TOWNS.

Abra de Ilog.—Population, 1,272.

Baco.—Population, 440.

Boac.—Population, 14,722; situated 48 miles from Calapan. It has highroads to Gasan and Mogpog.

Bongabon.—Population, 271.

Bulalacao.—Population, 516.

Caluya.—Population, 509.

Gasan.—Population, 4,785.

Iling.—Population, 427.

Irirun.—Population, 143.

Looc.—Population, 1,204.

Lubang.—Population, 6,541; situated 82 miles from Calapan

Mamburao.—Population, 499.

Mangarin.—Population, 2,289.

Mansalay.—Population, 379.

Naujan.—Population, 8,312.

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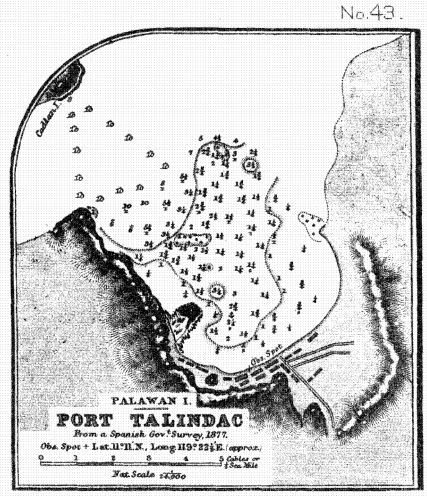
Cadlan I.
Obs. Spot
PALAWAN I.
PORT TALINDAC
From a Spanish Gov.t Survey, 1877.
Obs. Spot + Lat. 11° 11' N., Long. 119° 22½' E. (approx.)
0 1 2 3 4 5 Cables or ½ Sea Mile
Nat. Scale 1/14,500

Paluan.—Population, 1,561.
Pinamalayan.—Population, 292.
Pola.—Population, 572.
Puerto Galera.—Population, 1,912.
Sablayan.—Population, 851.
Santa Cruz de Mindoro.—Population, 300.
Santa Cruz de Napo.—Population, 15,797.
Semirara.—Population, 189.
Sibay.—Population, 252.
Subaan.—Population, 397.
Ticling.—Population, 154.
Torrijos.—Population, 3,119; situated 44 miles from Calapan.

ISLAND AND PROVINCE OF PARAGUA (PALÁWAN).

(Ch. 42 and 43, p. 209.)

The island and Province of Paragua is the most western of the Philippine Archipelago, and is situated to the north of Borneo. It is long and narrow, following a northeast direction, and nearly closes on the southwest the Sea of Mindanao, which enters from the China Sea by Balábac Strait on the south and between Mindoro and Paragua on the north. A chain of high mountains, some 6,560 feet high, runs lengthwise of the narrow belt formed by the island, whose length is 266 miles. The northwest and northeast slopes are narrow. The island has extensive and well protected harbors and bays. The area is 2,315 square miles and the population 45,000.

The capital is **Puerto Princesa,** with a population of 1,589.

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VISAYA ISLANDS.

ISLAND OF PANAY.

Panay is divided into three provinces, viz: Capiz to the north, Iloilo to the southeast, and Antique to the southwest. In general it is wild, with very high coasts, except in the northeastern part, where the latter are somewhat marshy. A mountain chain crosses the island from Point Juraojurao on the south as far as Point Potol on the north, following a direction almost parallel to the western coast. Large groups of sierras branch out to the right and left of the central chain; on the eastern slope begins another chain, running northeast to the extreme northeasterly point of the island. Owing to its cragginess, it has a great number of streams running in different directions. The area is 4,540 square miles.

ITINERARY OF COAST OF PANAY—WEST COAST.

The promontory, rising to 1,857 feet above the sea, and forming the northwest extremity of the island of Panay, terminates in this part in a clear and steep coast, the most salient points of which are those of Nasog and Pucio.

Point Nasog, the northwest point of the island, is a wooded bluff 718 feet high—safe and steep. On its northern side is a good anchorage in 5 fathoms, sand, before the village and river Malay.

Point Pucio, 8 miles S. by W. ½ W. of Point Nasog, and similar to it, is 620 feet high, and girt with rocks which project to some distance.

The anchorage of Baroanga is between the two points, in a little bay, with a depth of 3½ to 4¾ fathoms, before a beach, near the mouth of a little river. Between Baroanga and Point Pucio the coast is fringed with detached rocks. The largest of these are clear, but the lesser ones throw out reefs to the distance of ½ mile. Above these rocks the coast presents high, rocky cliffs, with cascades falling over them.

The coast from Point Pucio is safe, with good depth near it. It is bordered in general with sand beaches. Two lines

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of hills run parallel to the coast. Their slopes are cultivated and dotted with churches.

Pandan Bay is safe, steep, and deep, but offers little shelter. The town of Pandan is in the bend of the coast, with the little river Bugang running 2 miles to the west of it.

Shoal.—A bank, with 1¾ fathoms on it, lies 1½ miles N. 72° W. of the village Alipayao, 8 miles to the southward of Pandan.

Manignin Island, 13 miles to the SW. of Point Pucio, in Panay, is small, with an elevation of 150 feet in the center. It is fringed with a narrow, steep reef. On the southwest side is a village inclosed by a strong palisading.

Batbatan Isle, at 16½ miles S. 15° E. of Point Pucio, and 8½ miles west of Point Lipata, is about 400 feet high, with a central hill. On the north and northeast sides there is a reef, but otherwise it is safe and steep-to. The channel between it and the coast is clear.

Carmen Bank, 11½ miles S. 16° W. of Manignin, and 15½ miles S. 71° W. of Batbatan, is of sand and coral; it is circular, of 2 miles diameter; the least depth on it is 4½ fathoms, nearly in its center; on the rest of the bank the depth is from 7 to 23 fathoms. The following bearings were taken from its north end by the Spanish surveyors: Center of Seco Island S. 33° 31′ E.; Point Pucio N. 28° E.; center of Manignin N. 16° 32′ E. The first of these bearings places it in 11° 23′ 08″ N. and 121° 37′ 24″ E.; but Batbatan with Point Pucio, which was not clearly seen, places it more to the westward, and Manignin still more so, which makes one suspect that perhaps this island is, in fact, nearly a mile to the eastward of its assigned position.

Seco, or Pontud Islet, from its southeast point, bears S. 37° W. 15 miles from Batbatan, and SE. by S. nearly 3 miles from Carmen Bank. The dry part of Seco Bank, which is less than 1 cable in extent, and about 26 feet high, is covered with trees, probably mangroves; at low water rocks dry out at 3 cables from the sand. The soundings at ¾ of a mile from the islet are 38 to 70 fathoms.

A recent notice (1884) states that breakers extend to the northward 1 mile farther than indicated on chart.

Point Lipata, formed by a tongue of land that advances 1 mile to the westward, is surrounded by a narrow reef; there is anchorage to the north of it in uneven depths from 5½ to 23 fathoms, which is the only good anchorage on the coast during the southwest monsoon.

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Maralizon Islet, at 3¼ miles SW. by S. of Point Lipata, and 2 miles off the coast, is of medium height and unsafe; a reef advances 1 mile from it to the eastward and ½ mile to the westward. On the coast, facing the islet, is the town of Kolasi.

Shoals.—In front of the town of Tibiao, between Kolasi and Nalupa, there is a bank with 6 fathoms on it; and before the town of Nalupa there are rocks awash; and a coral bank, with 1½ least water on it, lies at 2½ miles W. by N. of the town.

The coast from Nalupa to Point Dalipé continues clear, with deep water near it; it consists of sand beaches forming slight indentations, and is cut into by several rivulets. Several small towns are on the shore. The river Sibalon, 5 miles north of Point Dalipé, has two mouths; both have bars, on which the water is less than 1 fathom. At a mile south of the river is the town of San Pedro.

Point Dalipé is low, and fringed with a narrow strip of rock.

To the southward of Point Dalipé is a sandy bay lined with rocks, having on its northern extremity the town of San José de Buenavista, the capital of the province, and on its southern the town of Antiki. Provisions can be procured at both these places, as well as wood and water.

The anchorage is to the southward of the town of San José, and near it, in 6 to 7 fathoms, sand, well sheltered during the northeast monsoon. The river Malandol enters the bay a little to the south of the town; its depth is 1½ fathoms. There is active coasting trade between San José and Iloilo, distant 70 miles.

The coast from Antiki to Point Anini is very steep, and bordered by a sand beach. Several rivers cut through it, and there are several towns along it, the principal one of which is Dao.

Point Naso, the wide southwest extremity of Panay, is formed by the termination of the coast range; it is clean and steep-to, and is fronted by the islet Nogas off its southwest point, and the islet Juraojarao, 3 miles to the eastward of Nogas.

Nogas Island is off the point and village of Anini, it is surrounded by a reef, and forms with Point Anini a narrow channel suitable for small craft. In the middle of the western entrance is a reef of ¼ of a cable diameter, with 2½ fathoms on

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it. Gunboats can anchor east of Anini during the northeast monsoon in 1½ and 2½ fathoms, sand. It is not advisable to anchor between Nogas and Juraojarao, as the bottom is rocky.

SOUTH COAST.

The south coast of Panay trends NE. for 15½ miles to Point Talisaya, near San Joachin, and this part of the coast is high, clean, and steep-to; from that point it trends ENE. for a distance of 21 miles to the town of Oton; this part of the coast is low, but free of danger until near Oton Bank. From Oton to Iloilo, 5½ miles, the shore continues low and clothed with mangroves. The bights along the coast have deep water, and a vessel can work close inshore, or from point to point with perfect safety; the wind scarcely ever blows on land, but there is no good anchorage, as the coast is steep and the holding ground is not good.

Oton Bank is a bank of soft, muddy sand, which commences less than ½ mile WSW. of the fort of Iloilo, and stretches for 6 miles to the WSW.; it then turns SW. for 3 miles, and finally curves back to the eastward towards Point Kabalik. This bank is said to be increasing to the westward. The depth on the ridge in the middle of it is generally 1½ fathoms, with two patches of ½ fathom, and on the other parts from 3½ to 5 fathoms; the width, from 4 cables at its eastern end to nearly a mile about its western part; but it is said to vary with the monsoons. The western limit of 5 fathoms is shown on the chart to lie S. 24° W. of the town of Oton, and the southern limit to be S. 85° W. of the rugged point, 150 feet high, 1 mile SSW. of Point Kabalik.

Oton Bank is composed of shifting sand, and vessels should not attempt to cross it. The northern channel between Oton Bank and the coast of Panay, which formerly had at its eastern end a depth of 3¼ to 4 fathoms, has shoaled considerably, and pilots have declined, since 1878, to take vessels drawing even less than 13 feet through it.

Directions.—After rounding Point Naso steer ENE. for Sta. Ana on the coast of Guimarás, and as the coast is bold stand in until points Kabalik and Bondulan are in line; then steer straight up, passing ¼ of a mile off Point Kabalik, and 200 yards off Point Bondulan. Strangers are apt to mistake points Bondulan and Dapdap (the latter is at the northern entrance of the harbor) for points Kabalik and Bondulan,

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and thus steer on to the Oton Bank. The pilots live on Guimarás Island, and come off on a vessel approaching Point Kabalik.

GUIMARÁS ISLAND, in front of Iloilo, is 23½ miles long, NNE. and SSW., and 10½ miles wide, and forms with Panay Island the Strait of Iloilo. It is high and hilly, especially on the eastern side, where the hills Jaljat, Pandan, and Akdan rise; in clear weather these hills can be seen from Point Sojoton on the west coast of Negros. The southeast coast is bordered by a number of islets, which render the navigation very difficult. The island is fertile.

Point Kubugao, at 1⅓ miles from the mouth of the river Dumangas in Panay, forms the north end of the island; it is rounded, and has detached rocks off it; from it the coast trends about SW. for 7½ miles, forming capes and bays up to Point Bondulan, opposite Iloilo, which is high and steep. A bank of 1½ to 2½ fathoms depth stretches out 3 cables off the town of Tilat or Buena Vista; from Point Bondulan a large bank of 1 to 4½ fathoms extends SW. for 1½ miles. Point Bondulan, in line with Iloilo Fort, clears this bank.

Point Kabalik, which is clean and bold, lies 3½ miles SW. by S. of Point Bondulan; this point should be passed close-to in taking the channel south of Oton Bank, which is here 6 cables wide, but looking from the westward Kabalik is not easily distinguished, being no higher than the rest of the coast, and, in fact, is not so conspicuous as the point 150 feet high without a name, which is 1 mile SW. by S. of it, and also clean and steep-to. From the south, or Sta. Ana, Kabalik Point is, however, easily recognized. From this point the coast turns south for 4½ miles to Port Sta. Ana, and is bold, with several little islets close to it.

Port Sta. Ana is a little port, clear and deep, open to the west, and easy to make; the entrance is ½ mile wide. Inside, to the northward, is a point, with an islet to the westward of it, and a rock awash at low water ⅔ of a cable to the SW. of the islet. The plan shows a shoal of 1 fathom extending 1 cable south of the point. The anchorage is in the middle of the port in 6½ fathoms. Water can be obtained from a rivulet at the bottom of the port. It is high water, full and change, at 12 hours; springs rise 5½ feet.

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Igan Bay, immediately south of Santa Ana, is clear, with a depth of 11 to 13 fathoms in the middle and $2\frac{1}{2}$ to $5\frac{1}{2}$ fathoms at the edge of the bank that borders the shore.

Point Lusaran, the southwest extremity of Guimarás, is safe and bold to the south and east of it; to the NW. there are several rocks, and an islet surrounded by reefs, and at $2\frac{1}{2}$ miles N. 60° W. of the point there is a rocky shoal.

The southeast coast of Guimarás is foul, and skirted by islets and rocks which form narrow channels that can only be navigated by experienced pilots.

Guimarás Strait, between this island and Negros, is $6\frac{1}{2}$ miles wide, but the passage is reduced to $1\frac{1}{2}$ miles by the islets and banks at the southern entrance. Ilampulugan Island is the most remarkable in the strait; between this island and Guimarás there are six steep rocks with flat summits, on some of which are trees; to the northward of it are two little islets connected with it on the SE. by a bank having $1\frac{3}{4}$ fathoms water on it; between this bank and the reef off Pandan (on the coast of Negros) is a channel of $1\frac{1}{2}$ miles wide and $4\frac{1}{2}$ to 8 fathoms deep; it is the least dangerous passage to take, but care must be taken to avoid a bank not sounded out, shown on the chart between Pandan and the islet of Nadulao; as also a bank of sand with $1\frac{1}{2}$ fathoms over it, of 4 miles extent, which lies 3 miles SE. to SSE. of Ilampulugan.

The east coast of Guimarás is clear, and a depth of $5\frac{1}{2}$ fathoms will be found at a distance of 1 mile from it.

Unisan Islets are a group of rocks that lie about 8 miles SE. of Point Lusaran. They are surrounded by reefs, and at 1 mile NW. of them is a little rocky patch; the islets and the patch occupy an extent of $2\frac{1}{2}$ miles. The soundings in the neighborhood show $6\frac{1}{2}$ to 8 fathoms to the northward, 20 fathoms at less than a mile to the eastward, and 4 to $6\frac{1}{2}$ fathoms in the channel between them and the islet Guinanon.

Iloilo.—The town of Iloilo stands on a low sandy flat on the right bank of a river; at the end of this flat is a spit on which a fort is built, and close to which there is deep water. Vessels of moderate draft (15 feet) can ascend the river a short distance and lie alongside wharves which communicate with the merchant houses, but large vessels must anchor outside near the spit. It is a town of great commercial importance, and a brisk coasting trade is carried on from it. The better class of houses in Iloilo are built on strong wooden

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posts, 2 or 3 feet in diameter, that reach to the roof; stone walls to the first floor, with wooden windows above, and an iron roof. The poorer class of dwellings are flimsy erections of nipa, built on four strong posts. The roads and bridges are in a deplorable condition and almost impassable in the rainy season.

The chief imports are Australian coal, and general merchandise from Europe, but most sailing ships arrive in ballast.

The exports are sugar, tobacco, rice, coffee, hides, and hemp; it is also the principal place of manufacture of piña, jusé, and sinamoya, a tissue greatly in use among the Philippines. In 1883 93,750 tons of sugar were exported, principally to America.

Typhoons do not occur regularly, but in most years the tail of one passes over the place, which suffers also from the visitations of locusts.

Supplies.—Provisions of all kinds can be obtained, but the prices are higher than at Manila. In 1886 beef was 12½ cents per pound, bread 11 cents, vegetables 11 cents, fowls $2 per dozen. Water is scarce and is brought across from Guimarás in tank boats; it is supplied to the shipping at the rate of $1 per ton; the Europeans depend mainly upon rain water.

There are no docks, nor means for effecting repairs; marine stores are not procurable.

Coal.—There are generally about 500 tons in store, chiefly Australian; it is kept for the supply of local steamers that take in what they require alongside the wharves. Vessels in the roads can have it brought off in bulk in lighters or schooners at a cost of 50 cents a ton. Coolies can be hired at 75 cents per ton, but they will not coal vessels if they can get other work. Notice is required the day before coaling, as men are not kept in readiness. Price of coal in 1886 was $11 per ton.

Mails.—There is regular weekly communication with Manila, which is 250 miles distant; the steamers generally arrive on Monday, and leave on the same or the following day; there are, besides, casual steamers, and other small steamers carrying on the local trade to Antiki and Negros; but most of the small coasting traffic is conducted in schooners.

Tugs are generally procurable from amongst the small steamers, and sailing vessels are generally towed out past the Oton Bank.

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RIVER ILOILO.—From the town to the sea the river makes two sharp bends, and, flowing with great force to the eastward, forms (between two banks consisting of its own deposits) an entrance channel, running NW. and SE., of $\frac{2}{3}$ of a cable width, and $1\frac{1}{2}$ fathoms depth at low water. The mouth of this channel is ordinarily marked by two stakes on the edges of the banks; near the southernmost is the house of the port pilots. In entering, the southern shore must be kept, as it is the deepest, and as the bank projects from the north side; within the bar the channel widens and the depth increases to 16 and 22 feet.

Anchorage.—The best anchorage for vessels drawing under 13 feet is within the river, off the wooden jetty near the warehouses. Vessels of more than 13 feet draft must anchor outside; there the best anchorage is with the fort bearing SW. $\frac{1}{2}$ W., and the lighthouse at the entrance NW. $\frac{1}{2}$ W. The *Challenger* anchored south of the spit, with the fort bearing S. 75° W. and the right extreme of the spit N. 2° W., in 10 fathoms at a cable's length from the shore, as it is convenient for landing and walking up to the town; but the captain of the ship *Panay*, who has been trading here for many years, reports that in southwest winds a heavy sea sets in which prevents landing. Abreast of the fort the eddies are strong and irregular on the flood.

The anchorage recommended is off the entrance of the river, with the north end of the fort spit bearing nothing northward of west. Abreast of the fort the eddies are strong and irregular on the flood; it is necessary to moor.

Tides.—The tidal streams reach a strength of 3 knots an hour, and they turn at high and low water by the shore. It is high water, full and change, at 12 hours; springs rise nearly 6 feet.

Lights.—A fixed red light is exhibited on the southern side of the entrance of the river Iloilo; it is elevated 20 feet above the shore and 24 feet above the sea, and is visible $9\frac{1}{2}$ miles, through an arc of 240°, between the bearings of N. 7° E. and S. 53° E. The light-house is painted gray and the lantern is of a copper yellow.

Directions.—Approaching Iloilo from the southwestward, steer in with Point Bondulan bearing NE. $\frac{3}{4}$ N., until the remarkable clump of trees on the north side of the river Iloilo is half its width open of the point; this clears Oton Bank;

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and when abreast the sandy beach, which is one-third the distance from Point Kabalik to Point Bondulan—keeping the point south of Point Kabalik open—edge to the westward until the fort is open of Point Bondulan, and round this point with the southeast angle of the fort in line with Point Dapdap.

NORTH AND EAST COASTS.

Point Potol is flat and sandy, with a few trees on it. To the east of the point, at less than a mile distance, are seven rocky islets. Small craft can pass between them and the coast at high water.

Coast.—From Point Potol the general trend of the coast is approximately ESE. for 73 miles to Point Bulakau, the northeast point of the island Panay. The shore is for the most part sandy, and the coast in its neighborhood low.

Point Sabonkogon, 3½ miles east of Point Potol, with which it forms a small bay, is high and clear, and can be approached to within a short distance. From it to Point Ibahai, 11½ miles S. 62° E., the shore is clear and steep.

Point Ibahai is sandy and flat. On it is the town of the same name. NE. of the town there is good anchorage, sheltered from southerly winds; but, as during the southwest monsoon the wind often veers suddenly to NW., and Pontud Bank would then be to leeward, a large vessel could not remain here with safety.

Point Sigat, 2½ miles E. by S. of Point Ibahai, and Agpa, 2½ miles farther on, are both high and surrounded by reefs a cable wide, with 8 fathoms at the edge. Between them is a little bay, open to the north, and fronted by Pontud Bank. The soundings in it range 11 fathoms, coarse sand, between the points, to 2 fathoms, sand, near the beach at the end.

Pontud Bank, the southeast extremity of which is 1½ miles N. by E. of Point Agpa, extends 2½ miles to the NW., with a width of 1 mile. It has three heads; the center one is the shallowest, having ½ fathom, sand and stones, on it; that to the SE. has 1¾ fathoms, coral, and that to the NW. 3¼ fathoms, sand and stones. The northern part of the shoal bears NE. 3 miles from Point Sigat, and has 8 to 23 fathoms at its edge, and no bottom with 100 fathoms line at the distance of 2 miles. The channel between the bank and the coast is good and deep.

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Akdan Point and River are 7½ miles SE. of Point Agpa. The point, which is flat, is formed by deposits from the river, which flows out to the west of it. On the bar there is ordinarily 5 feet water, and with fresh northeast breezes the sea breaks heavily on it.

Port Batan (ch. 44, p. 220), 10 miles SE. of Akdan Bar, is a deep bay surrounded by low land cut into by several creeks. The entrance is open to the NNE. and can easily be recognized by Okbok Hill, an isolated cliff with a flat top, situated 2 miles to the east of it in low land near the beach. On each of the points that form the entrance there is a vantay, and both points send out banks; the one from the east point extends 1½ miles NNE. and has ¾ of a fathom on it, and 2 fathoms at the end; the one from the west point extends ½ mile to the north and has 1 fathom on it. Between these two banks is a channel 3 cables wide and 6 fathoms deep, running approximately N. 17° E. and S. 17° W., that leads to the interior of the port, which is completely sheltered from wind and sea. The bar fronting the channel has ordinarily 3 fathoms on it, but it is liable, as well as the banks from the entrance points, to shift with the freshets. There are no other dangers than these banks; they are not marked by stakes, but are indicated by the color of the water over them.

Anchorage.—The best anchorage inside is in 5½ fathoms, mud, before the town of Batan.

Sapian Bay is 3 miles wide, and the same in depth; it is safe, with 4 fathoms at the entrance, and 3 fathoms in the center of the bay. It is sheltered from all winds but those from the northward.

Mobai and Tuat are small rocky islets, with trees upon them. Mobai is clean, with soundings of 3 fathoms off it; but Tuat has rocks on its northern and southern sides. Between these islets and the point south of them the depth is 4½ fathoms; but the point is fringed with rocky islets and shoals of 2 fathoms.

Point Nipa (Kolasi) is high and very steep; there are two flat rocks ¾ of a mile north of it; the northern one covers only at very high tides; between the two the depth is 3 to 4 fathoms, and between the south one and the point 3 fathoms; outside the rocks there are 5½ to 7 fathoms.

Kapis Roads, open to the NW., offers an anchorage in 6 fathoms, sheltered from the NE. between the bar of the river Kapis and Point Nipa.

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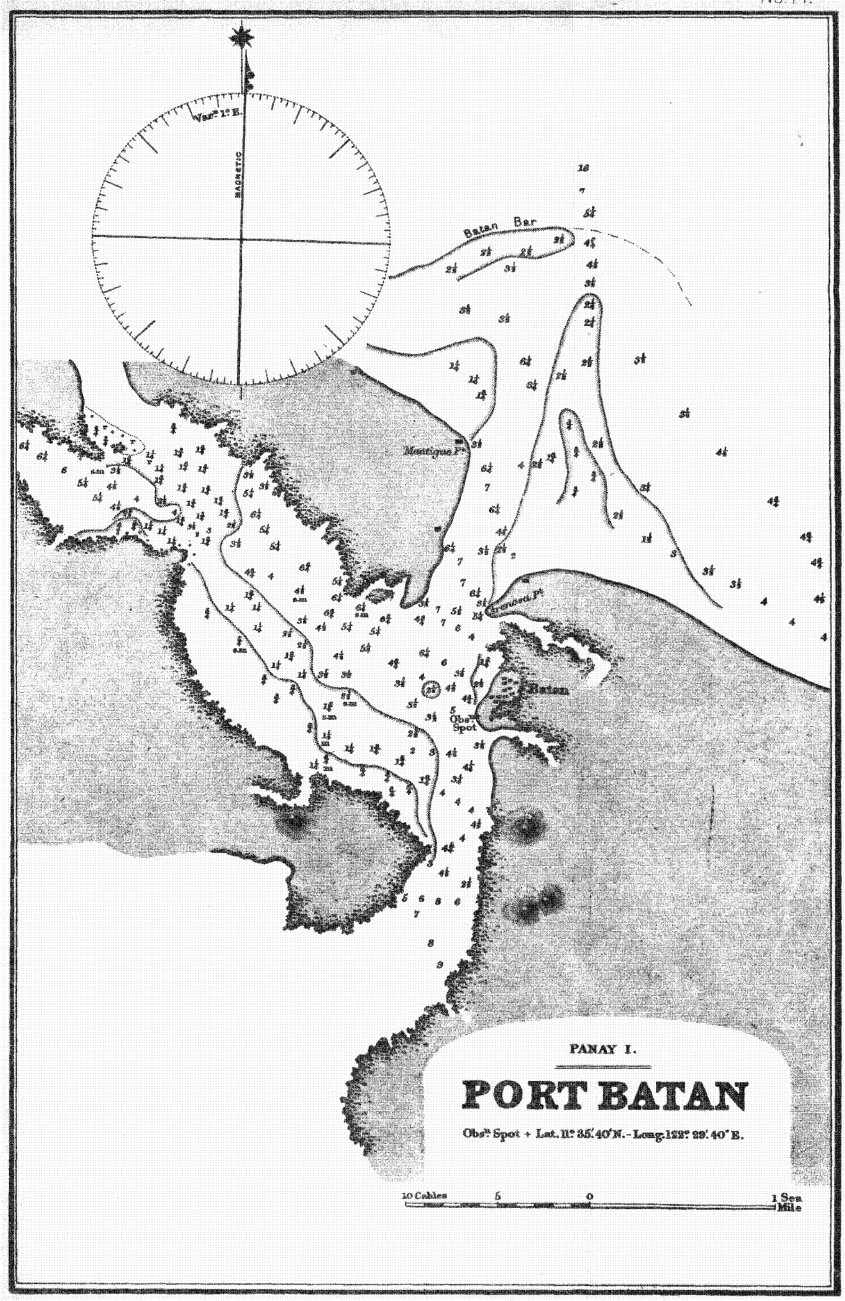
No. 44.



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River Kapis, or Panay, one of the most important in the island of Panay, is protected by a bar of sand, on which there are 4 or 5 feet at low water and sometimes as much as 13 feet at high water. Within the bar the depth increases to 3 fathoms and continues that depth for 3 miles, as far as the town of Kapis, which carries on a brisk native trade, principally in export of rice. Steamers from Manila call weekly.

Olutaya Island is 1 mile in length, NE. and SW., and very narrow; two rocks above water lie off its northeastern part, and another off its southwestern end. The coast of the island forms little bays, in which coasters find anchorage in 3 to 4 fathoms. Around the island there is 7 fathoms water, but the passage between it and the main is blocked.

Between Olutaya Island and Bulakau Point there is a great bay, with no good anchorage in it.

Kasamayan Bank, 3 miles NW. of the town Sanayon, on the southeastern shore of the bay, is ¾ of a mile long, west and east, and ½ mile wide; it consists of sand and rock. The middle part uncovers at very low tides; the remainder has less than 6 feet water over it. From the center Sharp Peak bears S. ½ W. and Olutaya Island WNW.

Bulakau Point, the northeastern extremity of Panay Island, is a spur from the mountains Sibala and Sharp Peak; the point is low and terminates in a sand spit, with rocks at the end, which extends out rather less than ⅓ of a mile, and uncovers at low water.

Tidal streams.—In the sea north of Panay, sometimes called the Sea of Kapis, the flood stream enters from the westward by the passage between Panay, Karabao, and Tablas, and also by the passage between Tablas Romblon and Sibuyan.

This last stream passes along the southwest coast of Sibuyan and between Kauit Point and Cresta de Gallo with great force, but on the east coast of Sibuyan it meets the flood stream from the eastward by the Strait of San Bernardino and loses all its force.

The ebb stream moves in the reverse direction and by the same passages, and is not felt on the southwest coast of Sibuyan.

The strength of the stream at full and change of moon is 3½ miles an hour between Panay and Tablas, and 2 miles an hour between Tablas and Sibuyan.

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JINTOTOLO CHANNEL is the name given to the passage between the southwest point of Masbate and the northeast point of Panay. Jintotolo Island, already described, and the Zapatos, three islets on a bank lying 6 miles SW. of Jintotolo Island, divide the channel into three passages; that between Jintotolo Island and the Zapatos is generally used.

Zapato Mayor is 260 feet high, wooded, and cultivated; a shoal extends 1 mile to the westward from the island, and has 3½ fathoms water over it, and 5½ to 7 fathoms at its edge.

Zapato Menor is 270 feet high, bare, and clean on all sides except the western, from which there projects a narrow ledge.

The little islet Chinela, between the two Zapatos, is surrounded by a reef 3 to 4 cables wide. The depth of water on the bank and between the islets is 5½ to 8 fathoms.

ELCANO SHOAL.—In August, 1865, the Spanish gun vessel *Elcano* struck soundings on a bank of sand and rock, 13 to 5½ fathoms. From the position in 5½ fathoms Zapato Mayor bore S. 33° E., Pulanduta Point N. 85° E., and Kamasusu Island N. 43° E.; the extent of the bank was estimated at 3 miles WNW. and ESE.

This bank is not shown on the Spanish chart corrected to 1873, but its position is close to the eastward of a sounding of 10 fathoms, obtained by H. M. S. *Nassau* in 1871. It lies close to one of the most frequented routes of the archipelago, but as yet no other notice of any danger has been reported.

Cucaracha Shoal, 6 miles N. 30° E. of Bulakau Point, and 11 miles S. 79° E. of Zapato Mayor, is a small circular bank, 1½ miles in diameter, covered by 2¼ fathoms, with one rock nearly awash on its northern part. Off the northern edge of the shoal the depth is 4 fathoms, and off the southern edge 6 fathoms.

ISLANDS OFF THE EAST COAST OF PANAY.—Manigonigo, 1¾ miles N. 10° E. of Point Bulakau, is a conical islet, small and sandy, 90 feet high, surrounded by rocks to the distance of 1 cable on all sides but the south, where they extend to 2 cables. The channel between the islet and the point has a depth of 2¾ to 4 fathoms, and is only fit for small craft; the greater depth is near the islet.

Danger.—A dangerous rock covered by 1¾ fathoms water, with 2½ fathoms beside it, lies 1 mile S. 26° W. of Manigonigo, and less than 1½ miles from the coast.

Currents.—The tidal streams are strong here; the flood tide sets to the east, and the ebb to the west.

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Lulugban, or Nabunat, $3\frac{1}{2}$ miles W. by S. of Point Bulakau, is 1 mile in extent and 100 feet high; it is surrounded by rocks which extend 4 cables from it to the SW. A patch of 2 fathoms lies $1\frac{1}{4}$ miles SW. of the isle.

Tulunanaun, $1\frac{3}{4}$ miles SW. of Lulugban, has a hill 200 feet high; on its northern part it is $1\frac{1}{5}$ miles long, NE. and SW., and is surrounded by rocks to the distance of 2 cables, with soundings of $2\frac{1}{2}$ to 4 fathoms at the edge; on its northwest coast are three steep rocks. The channel which separates it from Lulugban has $2\frac{1}{2}$ to 4 fathoms water. At 1 mile SE. of Tulunanaun is a patch of $3\frac{1}{2}$ fathoms, surrounded by $6\frac{1}{2}$ to $7\frac{1}{2}$ fathoms.

Balbagan is about a mile long, north and south, narrow, and about 100 feet high, with a little sand hill on its southeast extremity. It is surrounded by rocks and by a shoal which extends from it 8 cables to the north, a mile to the NE., and 2 miles to the south, where on the end of the shoal there is $3\frac{1}{2}$ fathoms water and $5\frac{1}{2}$ off it. The west coast of the isle is clear at 2 cables from it. At $1\frac{1}{2}$ miles S. 75° E. of Balbagan, between it and South Gigante, are rocks awash at low water, and at the northern entrance of the channel, between it and North Gigante, a patch of $5\frac{1}{2}$ fathoms.

The channel between Balbagan and Tulunanaun, with the exception of the rock above-mentioned, S. 45° E. of Balbagan, is clear, with 7 to 16 fathoms depth, but midway between Balbagan and Lulugban is a patch of $2\frac{3}{4}$ fathoms, and the soundings on the western side of this channel are irregular from $3\frac{1}{2}$ to 6 fathoms. Vessels of large draft will do well to take the passage north of the Gigantes, rather than that between Balbagan and Tulunanaun islets.

Gigantes Islands, or Sibuluak, are a group of two islands of moderate height, together with several islets, and sharp, detached rocks. The group is clear on its northern side, and the shoals on the other sides do not project more than $\frac{3}{4}$ of a mile.

North Gigante, or Sibuluak Babai, is 2 miles long, north and south, and 1 mile wide, with a wooded hill on either extremity; it is surrounded by a shoal which extends to $\frac{1}{2}$ mile to the east and west of it. At 7 cables to the east of the northeast extremity lies the islet Uaidajan, clear and steep, with $5\frac{1}{2}$ to 9 fathoms between it and North Gigante. On the southeast edge of the bank there are three detached rocks, with no channel between them and the island.

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South Gigante, or Sibuluak Lalaki, ½ mile south of the northern island, is of irregular form, about 2 miles long from east to west, and ½ mile wide on the western side, which is the highest. On its northern side is a reef which dries, and forms, with the reef of the northern island, a channel with 1½ fathoms at the eastern end and 6 fathoms at the western; the other sides are clear. At 8 cables SE. of South Gigantes are three small islands; the southernmost, named Antonia, is clear on the outside. Between these islets and South Gigantes there is a channel of 6 to 8 fathoms depth.

Anchorage.—In the northeast monsoon vessels of all sizes can anchor off the southwest coast of South Gigante in 7 fathoms, mud and sand. In the southwest monsoon very small vessels can anchor in the channel between the islands.

Bank.—About 5 miles N. 61° E. of the northeast point of North Gigante, is the shallowest part (3¼ fathoms) of a bank, which extends approximately 9 miles ESE. and WNW., with a mean width of 3½ miles. The depth on it is irregular, from 3¼ to 9 fathoms. The bank is included between the bearings NE. by N. and E. ½ N., from the northeast point of North Gigante. The channel between the shallow part of the bank and North Gigante, is the most open and direct for going through Jintotolo Channel.

Isolated shoals.—Within a radius of 12 miles from NW. by W. to SE. by E. of North Gigante, there are a certain number of isolated patches covered by 4 to 7 fathoms water. The northernmost of these, of 4 fathoms, has not been examined; and the position of another, of 6 fathoms, near the edge of the last described bank, is doubtful.

Coast.—From Point Bulakau the coast trends SSE. for 2½ miles up to a bluff, Kamboloton, and thence forms a wide but shallow bay, fronted by the island Balin, and terminated by Point Kago, 4½ miles south of the bluff. This bay, which is named Bankul, has only 1½ fathoms depth at high water, and at low water several sand banks appear, which block the passage to the three rivers that fall into it.

Balin or Binuluangan Island is 3½ miles long, low and of irregular shape; it has a surrounding reef with several rocky islets on it; the channel between the south point of Balin and Point Kago is 1½ fathoms deep.

Kalagnan Island is separated from Balin by a channel 7 cables wide at the northeast end, but almost closed at the

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southwest; it is $3\frac{1}{2}$ miles long, NE. and SW., and 3 miles wide, and of regular height. The east coast is clear and steep, but the northeast point has several rocks around it; the western side contains several bays of no importance, because of the little depth of water in them. Three and one-half miles east of the north point of the island there is a patch of 6 fathoms, surrounded by 14 to 17 fathoms.

Cañas is a little island off the east coast of Kalagnan; it is $\frac{1}{2}$ mile long, east and west, of middling height, and clean, with 7 to 11 fathoms at 1 cable from its east side, and $2\frac{3}{4}$ to $3\frac{3}{4}$ at the same distance from its west side. The soundings in the channel between it and Kalagnan are 7 to 11 fathoms, and in the channel between it and the northwest point of Sikogon, 11 fathoms.

Sikogon, 6 cables SE. of Kalagnan, is high and of $2\frac{1}{2}$ miles length, NE. and SW. The northeastern part has a reef of 2 cables width, on which is a little islet, steep on the outside; this reef fringes the island on its northern and western sides; the east coast is clean and steep. At $2\frac{1}{3}$ miles east of the little islet on the north side is a patch of $4\frac{3}{4}$ fathoms, surrounded by 9 to 20 fathoms.

Carmencita Shoal is small, of sand and rock, with 5 feet least water on it, and 4 to 6 fathoms at the edges. It bears S. 42° E. 1 mile from the east point of Cañas, and is 9 cables from the north coast of Sikogon.

Sikogon Channel, between Sikogon and Kalagnan, is $\frac{1}{2}$ mile wide and 7 to 12 fathoms deep; it is clear and safe, and is the channel recommended for vessels making for Iloilo Strait.

Coast.—South of Point Kago the coast forms a little shoal bay and then the anchorage of Estancia, of $2\frac{1}{2}$ to $5\frac{1}{2}$ fathoms, between the little island Luginut (SW. of Kalagnan) and the Bayas Isles. The town of Estancia is a mile inland, and there is a good road to it from the coast. From there the coast is foul, and should be avoided till off the island Ragalumbi, which is high; it then forms two bays, clear and deep, giving fair shelter and anchorage in westerly winds to the strait between Tagil Island and the coast of Panay.

Bayas Isles are a group of four islets, of little height, near the coast, $3\frac{2}{3}$ miles SE. of Point Kago. They extend $1\frac{2}{3}$ miles from east to west and are surrounded by sand banks and rocks, with no passage between them. At 1 mile west of the south point of the largest isle is a shoal awash at low water,

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and between Bayas and the island to the northward, Luginut, is another patch of ½ fathom.

Anchorage.—Small craft can find anchorage, sheltered from all winds, between Bayas and Luginut, in 2½ to 7 fathoms. H. M. S. *Nassau* anchored in December, 1871, in 13 fathoms, mud, with Culebra Island S. by E. ½ E. and the right tangent of Sikogon E. ½ S., the weather being thick and dirty, and night coming on.

CULEBRA.—Midway between Sikogon and Pan de Azucar is a small island about 200 feet high, surrounded by a reef of sand and rock, which extends 6 cables to the westward, with 1½ fathoms at its extreme western edge, and 11 fathoms at a short distance from the island and from the reef.

Shoals.—There are three shoals northward and eastward of Culebra. The northernmost is 2½ miles N. 42° E. of Culebra, of 1 mile extent, and 2 fathoms least water on its east side, and 3¾ and 6 fathoms on the rest of the shoal. The easternmost is 4 miles ENE. of Culebra, and has 1¾ fathoms water over it, and the southernmost is 2½ miles E. by N. of Culebra, with 1½ least water. These three shoals all have 8 to 20 fathoms around them, which are the general soundings off the northeast coast of Panay. Nearly 5½ miles SE. of Culebra, and at the same distance to the east of Pan de Azucar, there are two patches of 2¾ and 3¾ fathoms, surrounded by 14 and 15 fathoms.

Pan de Azucar (sugar loaf) is near the coast of Panay, and is the largest of a group of five islands at the northern entrance of Iloilo Strait. Its base is 4 miles in extent, and it has two remarkable peaks; the highest is 2,037 feet. The north coast sends out a reef to the northward, which terminates in a rock at ½ mile from the island. The east coast is clear. Between this island and Tagil, to the SW., is a narrow channel of 1 to 1½ fathoms. Bagaisi, 1 mile north of Pan de Azucar, is clear and deep in its surroundings.

Naburut, 4 cables off the northwest coast of Pan de Azucar, is clean.

Buglug, on the southeast coast of Pan de Azucar, is united to that island by a stretch of land; it is clear and steep on the east side.

Midway between Pan de Azucar and the coast of Panay is a small shoal, of 1 cable extent, awash at low water, there are 2½ fathoms between it and Pan de Azucar, and 1½ fathoms between it and Tagil.

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Malangaban, $1\frac{1}{2}$ miles southeast of Pan de Azucar, is nearly round; high, clear and deep off its western part. The little islet close to its southwest part is also clear. The channel between Malangaban and Pan de Azucar is $1\frac{1}{2}$ miles wide, and 9 to 12 fathoms deep. Danao, between Malangaban and Bulubadiangan, is small and surrounded by a reef; the channel between it and Bulubadiangan has $3\frac{1}{4}$ to 4 fathoms.

Bulubadiangan, 2 miles SSE. of the south point of Pan de Azucar, is of triangular shape, of middling height, clear and deep; off its south point are two islets joined to the point by a reef.

Baliguian, 9 miles east of Bulubadiangan, is a small islet, 150 feet high, surrounded by a narrow reef very steep-to, around which there are 15 to 20 fathoms. This islet is a good natural mark for vessels making Iloilo Strait from the northward and from the eastward, to clear the numerous shoals about the route.

Shoals.—The three nearest shoals are: One of $2\frac{1}{2}$ fathoms, lying south $1\frac{1}{2}$ miles of Baliguian; another of $2\frac{3}{4}$ fathoms, lying NE. $3\frac{1}{2}$ miles; and another of $3\frac{3}{4}$ fathoms, NNE. $\frac{1}{4}$ E. $4\frac{1}{2}$ miles from Baliguian. The French charts show another shoal 4 miles north of Baliguian.

A written description of all the other shoals which encumber the channel north of Negros Island, between the northeast part of Panay and the island Bantayan, would be needless; they can best be understood from the chart.

Tagil Island, between Pan de Azucar and the headland of Bakahuan, is $3\frac{1}{2}$ miles in length from north to south and of moderate height. The eastern shore is clear and steep, with the exception of a small shoal that projects from the middle of it. The western shore and the south point send out reefs, and off the southwest point is a rocky shoal, awash at low water. The passages which these reefs and shoal form with the coast of Panay, have a depth of $1\frac{1}{2}$ to $2\frac{1}{2}$ fathoms.

Sombrero, $\frac{1}{2}$ mile NW. of the northwest point of Bulubadiangan, is round, high, clean, and steep-to. At its southeast part there is anchorage in 9 fathoms, mud, sheltered from southwest winds. The channels between it and Pan de Azucar and Bulubadiangan are safe; in the last the depth is $6\frac{1}{2}$ fathoms.

Bagabu is very near the south point of Tagil; on its south part a point of sand and rocks projects to a very short distance. The channel between this islet and Bulubadiangan is $1\frac{1}{2}$ miles wide and 7 fathoms deep.

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Tugubanhan is a little more than a mile SE. of Bakahan headland on the coast of Panay, with which it forms the strait named Apiton. It is 4 miles long, NNE. and SSW., and 2 miles wide; high, clear, and steep-to.

Apiton Strait is the southern termination of the inner route to Iloilo Strait from the northward; it is clear, with a depth of 9 to 11 fathoms, and the coasts on either side are steep.

Anajuayan, 2 miles SE. of Tugubanhan, is 336 feet high, and visible from a ship's deck 15 miles off. Between it and Tugubanhan the depth is 12 fathoms.

Turia Rock is a dangerous rock 4 miles S. 44° W. of Anajuayan; it is about 100 feet in extent, with 5¼ feet water on it, and 8 fathoms close to. From a position in 4½ fathoms, 220 feet north of the rock, the following bearings were taken: Tangent of southeast part of Anajuayan N. 47° E., north part of Calabazas islands N. 63° W.

Anchorages.—The *Challenger*, in October, 1874, anchored for the night north of Anajuayan in 10 fathoms, with the right tangent of Tugubanhan bearing N. and the left tangent S. 53° W. There is also anchorage off the northwest side of Tugubanhan, and off Bakahan bluff.

SOUTHEAST COAST.

The north side of Apiton Strait is formed by a rocky headland (Bakahan Bluff), high, clear, and steep-to, with a little islet joined to its southern part. On the south side of the bluff is Abra de Apiton, a creek with an entrance channel 1 fathom deep, close to the north shore and between that shore and a bank in the mouth of the creek. Inside there is a depth of 3 fathoms, and anchorage for small craft near some rocks off the beach.

Water.—There is a watering place on the north shore near the first beach at the entrance; water can also be obtained on the south side, but not so good.

West of Abra de Apiton the coast forms a bay, Ajui, 3½ miles wide, in which there is shelter from northeast winds. The river Ajui, leading to the town of the same name, enters on the north shore; it has a depth of 1 to 1½ fathoms at high water.

Binanan Islets are two small islets in the middle of the bay, near the coast; between them, and about them, the depth is 4½ fathoms.

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On the western shore are the towns Mangurukuru and Pili, the last standing on a little height on the western point of the bay. Sal Islets are united to the coast off Pili by a reef having $\frac{3}{4}$ of a fathom on it at low water.

Calabazas Isles are two islets of little height and extent to the southward of Sal Islets, and $\frac{3}{4}$ of a mile from the coast of Panay; the southernmost has a steep beach of sand on its northern side, where there is anchorage sheltered from the southwest. The soundings on the outside of these islets are $4\frac{1}{2}$ to 8 fathoms; between them $3\frac{1}{2}$ fathoms, and between them again and the coast of Panay, $5\frac{1}{2}$ to 7 fathoms.

Pepitas Rocks, $1\frac{1}{2}$ miles to the southward of the Calabazas, are some black rocks 7 feet high, about 1 cable in extent; vessels can pass between them and the coast, and also between them and the Calabazas.

Coast.—Kulasi Bay and Cañas Gulf offer no shelter. Barotak Bay has a depth of 3 fathoms; a river of the same name enters it, in which boats can ascend at high water to the town of Barotak. The point which separates this bay from the next, Banate, is surrounded by rocks, steep-to, which continue round the shore in front of the town, Banate. From here the coast trends to the southward for 13 miles to Point Dumangas, and then west 5 miles to the river Dumangas; it is low and covered by mangroves, and is unapproachable on account of shoal water, there being a depth of $1\frac{1}{2}$ fathoms at a distance of 3 miles in places. The rivers Anilao and Dumangas are shallow, and boats can enter them at high water only.

Mounts Orok and Saligit are about equal in height, but Mount Orok has a small sharp peak, and Mount Saligit a long flat summit. When in line they serve as marks for the eastern end of Iguana Shoal. Mount Kolan, or Kolait, is low, and not conspicuous until bearing west.

Tomonton Shoal, off Point Tomonton in Negros, stretches $2\frac{1}{2}$ miles to the NW., and must be given a wide berth; it has $1\frac{1}{2}$ fathoms at its end, and is said to be extending.

Iguana Bank is a long spit of sand in the middle of the eastern entrance of Iloilo Strait, between Point Dumangas and the island Guimarás. The shallowest part of the bank, on which the least water is $1\frac{1}{2}$ fathoms, is $\frac{1}{2}$ mile in length, ENE. and WSW., and 3 cables wide. From it Dumangas Vantay bears N. by E., and the largest of the Siete Pecados NW. by W. $\frac{1}{2}$ W. A patch of 2 fathoms lies 8 cables NW.

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of this position, and the part of the bank covered with less than 4 fathoms water lies between the bearings S. 20° E., and S. 53° W. from Dumangas Vantay, and S. 53° E. and S. 73° E. from the largest of the Siete Pecados. On this arc of 20° the light on Siete Pecados shows a red sector. Mounts Orok and Saligit in line over Dumangas Vantay, bearing NNW. ¾ W., clear the eastern end of this shoal.

The channels between this limit of 4 fathoms round the bank, and the same depth off the coast, are about a mile wide. In the northern channel the least depth is 4¼ fathoms, and in the southern 6½ fathoms at their eastern entrance. The tidal streams set with great force over Iguana Bank.

Siete Pecados is a cluster of rocks lying in mid-channel off the north of Guimarás. The highest, from which a light is exhibited, is 25 feet above the sea, and all of them are steep; but on the ends of the shelf on which they stand, and which measures about ½ mile, NE. and SW., there are rocks with very little water on them. A rock with 4 feet of water over it, on which the *Marquis de Victoria* struck, lies 270 feet from the northwest islet of the group; it is a pinnacle with 8 and 9 fathoms all round it, and lies out of the usual track.

The channel between the Siete Pecados and the coast of Panay is ½ mile wide and 9¼ to 20 fathoms deep; the channel between them and Guimarás is of the same width, and 7 to 10 fathoms deep. Both are clear, but the northern is preferable. Vessels should keep nearer the islands than to the coast of Panay.

From this to the port of Iloilo the course is clear.

Light on Siete Pecados.—An iron light-house, 29 feet high, colored bluish gray, is erected on the southern cliffs of the largest islet of this group, in the northern part of Iloilo Strait, exhibiting a fixed white light showing a red sector through an arc of 20°, or between the bearings of N. 74° W. and N. 54° W. (covering Iguana Bank); it is raised 98 feet above the sea, and should be visible in clear weather from a distance of 11 miles.

Currents.—The flood tide in Iloilo Strait passes to the north as far as Pan de Azucar, approximately, where it meets the other branch of the flood tide coming from the northward. The ebb stream runs in the opposite direction, *i. e.*, to the southward in Iloilo Strait, and to the northward north of Pan de Azucar. The velocity in the strait reaches 4 to 5 miles an hour.

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General directions from Verde Island Passage to Iloilo, eastern route.—The directions for Verde Island Passage as far as Dumali Point have been given in the last chapter. From a position 4 miles NE. of Dumali Point a southeast course will lead between Dos Hermanas and Maestro de Campo Islands and south of Simara; then Cobrador Island should be steered for until the channel opens between Romblon and Tablas Islands. After rounding the northeast point of Tablas a south course takes a ship in mid-channel and clear of all danger. The light of Port Romblon is badly placed, and scarcely discernible; it is not an official light. By night this south course should be kept for 14 miles, then a SE. $\frac{3}{4}$ E. course leads 2 miles south of the southern end of Cresta de Gallo Reef and midway between Jintotolo Island and Zapato Mayor. If the weather is misty, the first land seen will probably be the high and conical hill of Olutaya, on the northern coast of Panay.

From 2 miles south of Jintotolo Island a course SE. by E. $\frac{1}{2}$ E. should be steered for 9 miles until the peak of Pan de Azucar bears S. by W. $\frac{1}{4}$ W., and then a south course toward the highest hill of Sikogon Island. This will lead between Balbagan and Tulunanauan Islets, in depths of 7 and 8 fathoms, and $\frac{1}{2}$ mile east of the $2\frac{3}{4}$-fathom patch between Balbagan and Lulugban islets.

The east point of Cañas Islet in line with same highest hill of Sikogon will clear that $2\frac{3}{4}$ patch. When east of the north point of Kalagnan Islet steer for the middle of the channel between Kalagnan and Sikogon, south of Cañas. This channel passed, steer S. by W. $\frac{1}{2}$ W. to clear the reef of the island Culebra; when west of that island steer to pass between Buglug on the southeast coast of Pan de Azucar and Malangaban, then between Bulubadiangan and Sombrero, which is $\frac{1}{2}$ mile to the NW. of it, then through Apiton Channel between the coast bluff and Tugubanhan, and enter the Strait of Iloilo. All these channels are clear, and the least depth is 7 fathoms. After Apiton Channel the Calabazas Islands and Pepitas Rocks, which are safe, will be passed at 1 to 2 miles distance.

Vessels drawing less than 13 feet can pass between Point Bulakau and Manigonigo Islet, but this channel is not recommended.

If it is proposed to pass outside the island, after passing between Balbagan and Lulugban when abreast of Tulunanauan

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steer S. 27° E. until Baliguian Islet bears south; a course south for that islet will then lead half way between the patches of $2\frac{3}{4}$ and $3\frac{3}{4}$ fathoms. From Baliguian a course SW. $\frac{1}{2}$ W. will lead between Anauayan and Ilakaon on the north coast of Negros, taking care to avoid Turia Rock. To clear this rock a vessel should not pass west of the south point of Tugubanhan until the southern extremity of Calabazas bears WNW.; she can then steer WSW.

If it is preferred to pass northward and eastward of the Gigantes, North Gigante should be passed at the distance of $1\frac{1}{2}$ miles, and either the Sikogon and Apiton passage may be taken, or the Anauayan Channel.

From Apiton Pass or Anauayan Channel, whichever has been taken, a course should be steered to pass 3 miles from Tomonton Point in Negros, and then a SW. by S. course should be shaped for 12 miles, keeping a lookout for the reefs off the coast of Panay. When the highest of the Siete Pecados bears W. $\frac{1}{4}$ N., a course should be steered for it, gradually approaching the fishing stakes on the Panay side; this will lead clear of the shoal water off Point Dumangas and that extending WNW. of Iguana Bank. These fishing stakes are generally in 2 fathoms water, and at 1 or 2 cables from them the depth is 9 to 11 fathoms.

Directions for Iloilo Strait.—Coming from the eastward and passing north of Siete Pecados, vessels should round Dumangas Point at a distance of 1 mile, and keep within the white light of Siete Pecados, avoiding the red sector. From abreast the light, a mid-channel course should be maintained to Kabugao Point, when the red light at Iloilo may be steered for, keeping rather to the Guimarás shore.

To pass southward of Siete Pecados, the light should be approached bearing about NW., avoiding the red sector and the bank extending about 1 mile northeastward of Nabalus village. A small shoal lies in the mid-channel about south from the light, which will be avoided by keeping more toward the light when it approaches the bearing of north. When westward of the light, proceed as directed before.

Northward from Port Iloilo, leaving Iloilo by the eastern channel, the Pecados Rocks, in line with a fall of the hills in the back range of Panay Island, bearing W. $\frac{1}{4}$ N., will lead between Iguana Bank and the shoal water off the northern shore; and when mounts Saligit and Orok are in line, bearing

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NNW. $\frac{3}{4}$ W. and Point Tomonton NE. $\frac{1}{4}$ E., a NNE. course may be taken.

PROVINCE OF ANTIQUE.

Situated south of Luzon, it is bounded on the north by Capiz, on the south by Mindanao Sea, on the east by Iloilo and Capiz, and on the west by the Sea of Calamianes. The country is mountainous and covered with forests, which afford good timber, resins, pitch, wax, etc. The principal industries are stock raising and the manufacture of fabrics. In the mountains are mines of various metals and hard coal, and quarries of marble. The area is 839 square miles, and the population 9,356, divided among 20 pueblos, 51 visitas, and 74 rancherías of infieles.

The capital is **San José de Buenavista,** with a population of 5,621. It is situated 262 miles from Manila, and communicates with the other provinces of the island by means of regular highways in dry weather, but these are impassable in rainy weather. In general, traveling is done by sea.

CITIES AND TOWNS.

Anini.—Population, 4,802.

Antique.—Population, 1,236; situated 4 miles from San José de Buenavista.

Barbasa.—Population, 3,231.

Bugason.—Population, 14,104; situated 24 miles from San José de Buenavista.

Cagayancillo.—Population, 3,000; situated 95 miles from San José de Buenavista.

Cavitan.—Population, 1,240; situated 30 miles from San José de Buenavista.

Culasi.—Population, 10,553; situated 52 miles from San José de Buenavista.

Dao.—Population, 7,948; situated 25 miles from San José de Buenavista. It has a highroad to Carabao.

Egaña.—Population, 1,995, the township having 3,807; situated 13 miles from San José de Buenavista.

Guisijan.—Population, 6,247; situated 26 miles from San José de Buenavista.

Lunisijan.—Population, 2,962; situated 25 miles from San José de Buenavista.

Nalupa Nuevo.—Population, 2,972.

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Pandan.—Population, 13,737; situated 103 miles from San José de Buenavista. It has a highroad to Patnongon.

Patnongon.—Population, 5,911; situated 3 miles from San José de Buenavista.

San Pedro.—Population, 7,366; situated 3 miles by wagon road from San José de Buenavista.

San Remigio.—Population, 2,503; situated 11 miles from San José de Buenavista.

Sebaste.—Population, 3,676; situated 66 miles from San José de Buenavista.

Sibalom.—Population, 11,675; situated 6 miles from San José de Buenavista. It has highroads to the latter place as well as to San Pedro, San Remigio, and Egaña.

Tibiao.—Population, 5,402; situated 44 miles from San José de Buenavista.

Valderrama.—Population, 4,372; situated 25 miles from San José de Buenavista.

PROVINCE OF CAPIZ.

It is bounded on the north by the Archipelago Sea, on the east by the District of Concepción, on the south by the ridge separating it from Iloilo, and on the southwest by the mountains separating it from the Province of Antique. Its very high mountains are covered with luxuriant vegetation, and give rise to many rivers which water the valleys of the province. There are gold and copper mines, and much tobacco, sugar, rice, and abacá is raised. During the year three fairs are held, in which articles of the country are bartered. The province is divided into two parts, called Ilaya and Aclan, which are irrigated by the rivers Panay and Adan, respectively. The area is 1,543 square miles and the population 189,171, distributed among 36 pueblos and 287 barrios.

The capital is **Capiz,** with a population of 13,676. It is situated 290 miles from Manila. It has a harbor for vessels of ordinary draft, and highroads to Iloilo, Antique, and the District of Concepción. There is a steamer kept by the state, stopping at the harbor every 28 days and keeping up communication with Manila, Romblon, Iloilo, and Cebú.

CITIES AND TOWNS.

Balate.—Population, 5,065; situated 40 miles from Capiz.

Banga.—Population, 9,127.

Batan.—Population, 12,908; situated 31 miles from Capiz.

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Buruanga.—Population, 3,967; situated 86 miles from Capiz.

Calibo.—Population, 10,815; situated 40 miles from Capiz.

Cuartero.—Population, 5,175.

Dao.—Population, 8,785; situated 17 miles from Capiz.

Dumalag.—Population, 8,000; situated 26 miles from Capiz. It has a road to Tapaz and one to Cuartero.

Dumarao.—Population, 5,085; situated 28 miles from Capiz. It has a telegraph station.

Ibajay.—Population, 11,351; situated 62 miles from Capiz.

Ibisan.—Population, 5,000; situated 6 miles from Capiz.

Jaguaya.—Population, 2,500; situated 31 miles from Capiz.

Jamindan.—Population, 5,000; situated 6 miles from Capiz.

Jimeno.—Population, 3,278; situated 25 miles from Capiz.

Lezo.—Population, 5,500.

Libacao.—Population, 3,914; situated 47 miles from Capiz.

Loctugan.—Population, 3,475; situated 5 miles from Capiz.

Macato.—Population, 10,136; situated 45 miles from Capiz.

Madalag.—Population, 2,684; situated 48 miles from Capiz.

Malinao.—Population, 7,571; situated 22 miles from Capiz.

Mambusao.—Population, 11,000; situated 26 miles from Capiz.

Navas.—Population, 5,257; situated 75 miles from Capiz.

Numancia.—Population, 6,123.

Panay.—Population, 15,484; situated 4 miles from Capiz.

Panitan.—Population, 10,020.

Pilar.—Population, 2,895, the township having 8,905; situated 30 miles from Capiz.

Pontevedra.—Population, 9,512; situated 32 miles from Capiz.

Sapian.—Population, 4,863.

Segui.—Population, 3,862; situated 17 miles from Capiz. There are highroads to Dao, Mambusao, and Ibisan.

Sigma.—Population, 1,660; situated 14 miles from Capiz.

Tangalan.—Population, 2,982; situated 51 miles from Capiz.

Tapaz.—Population, 2,892; situated 22 miles from Capiz.

PROVINCE OF ILOILO.

It is situated to the southeast of the Province of Capiz and west of Antique. The ground is generally level, and, being irrigated by numerous rivers, is fertile, so that tobacco, cacao,

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sugar cane, abacá, rice, and maize are grown; besides, there is good pasturage for raising herds of cattle and horses, and gold and other mines are known. The principal industry is the manufacture of fabrics of sinamay, piña, jusi, etc., requiring over 30,000 looms. The dimensions are 99 miles in length by 27 miles in width, and the population is 472,728.

The capital is **Iloilo,** with a population of 10,380. It is situated 355 miles from Manila, and is the residence of the governor, captain of port, and a number of treasury, justice, and fomento officials. It has a pretty cathedral, a seminary, casa real, and court-house. It is one of the most mercantile towns of the Visaya group, and has some industries, among which are a machine shop and foundry, a carriage factory, and a hat factory.

CITIES AND TOWNS.

Alimodian.—Population, 11,837; situated 12 miles from Iloilo.

Anilao.—Population, 2,699; situated 12 miles from Iloilo.

Arevalo.—Population, 3,594; situated 4 miles from Iloilo.

Banate.—Population, 6,764; situated 31 miles from Iloilo.

Barotac Nuevo.—Population, 11,805.

Barotac Viejo.—Population, 5,590; situated 32 miles from Iloilo.

Buenavista.—Population, 3,497; situated 1 mile from Iloilo.

Cabatuan.—Population, 18,177; situated 13 miles from Iloilo. It has highroads to Maasin, Janinay, Santa Bárbara, and San Miguel.

Calinog.—Population, 8,866; situated 23 miles from Iloilo. It has a highroad.

Córdoba.—Population, 2,744; situated 2 miles from Iloilo.

Dingle.—Population, 11,000; situated 21 miles from Iloilo.

Dueñas.—Population, 7,130; situated 28 miles from Iloilo.

Dumangas.—Population, 14,114; situated 24 miles from Iloilo.

Guimbal.—Population, 10,958; situated 18 miles from Iloilo.

Igbaras.—Population, 12,140; situated 24 miles from Iloilo.

Janinay.—Population, 28,738; situated 3 miles from Iloilo.

Jaro.—Population, 9,482.

Lambunao.—Population, 7,989; situated 21 miles from Iloilo. It has a highroad.

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Leganes.—Population, 2,875; situated 6 miles from Iloilo. It has a highroad to Iloilo to the south and to Zarraga to the north.

Leon.—Population, 13,950; situated 16 miles from Iloilo. It has highroads to Córdoba and San Miguel.

Lucena.—Population, 6,511; situated 7 miles from Iloilo.

Maasin.—Population, 9,674.

Manduriao.—Population, 6,749; situated 4 miles from Iloilo.

Miagas.—Population, 22,100; situated 24 miles from Iloilo.

Mina.—Population, 4,357.

Molo.—Population, 9,547.

Nagaba.—Population, 8,000; situated 5 miles from Iloilo.

Oton.—Population, 13,363; situated 7 miles from Iloilo.

Passi.—Population, 13,802.

Pavia.—Population, 10,221; situated 6 miles from Iloilo.

Paz (La).—Population, 3,641; situated ¼ mile from Iloilo. There are two highroads, one to Iloilo and one to Jaro, and a post office.

Pototan.—Population, 14,512; situated 18 miles from Iloilo.

San Dionisio.—Population, 1,782.

San Enrique.—Population, 3,015; situated 27 miles from Iloilo.

San Joaquin.—Population, 13,918; situated 34 miles from Iloilo. It has a telegraph station.

San Miguel.—Population, 7,300; situated 9 miles from Iloilo.

Santa Bárbara.—Population, 13,000; situated 16 miles from Iloilo. It has highroads leading to Cabatuan, Pavia, San Miguel, Zarraga, and Lucena.

Sara.—Population, 10,950; situated 75 miles from Iloilo.

Tigbauan.—Population, 9,109; situated 7 miles from Iloilo.

Tubugan.—Population, 4,368; situated 31 miles from Iloilo.

Zarraga.—Population, 5,208; situated 8 miles from Iloilo.

PROVINCE OF BOHOL.

It is bounded on the north by the sea between Cebú and Leyte, on the east by the Surigao Sea, on the south by the Sea of Mindanao, and on the west by the channel separating it from Cebú. The province is composed of the islands of Bohol and Dauis. They are somewhat mountainous and well wooded, and coffee, abacá, sugar cane, and tobacco are raised.

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In the mountains of Bohol game is plenty, and many coal and phosphate of iron mines are supposed to exist. Manufactures consist in fabrics of sinamay and other materials. The area is 1,617 square miles and the population 247,745.

The capital is **Tagbilaran,** with a population of 8,638. It is situated 365 miles from Manila.

ITINERARY OF COAST OF BOHOL—SOUTHWEST COAST.

Kalape Island, lying near the coast, is of no great height; it is foul and surrounded by a steep reef. The little port of Kalape, the entrance to which is very difficult and very dangerous, is between the island and the coast.

Kabilao Island, separated from the coast islands Kalape and Sandingan by a wide and deep channel, is 2½ miles long, east and west, and 1½ miles wide. On the southwest side it has a small reef; the western side is rocky, rugged, and steep; the northern and eastern sides present sand beaches and rocky bluffs.

Tides.—The flood stream makes to the northward and the ebb to the southward with great force.

Laon point and town, or the point of the mole, is terminated by a sand beach, on which is a rampart; it is foul and surrounded by great detached rocks. The mole is 328 yards long, and the town is reached by steps cut in the rock. Between this mole and Sandingan Island is a little bay, where shelter may be had from N. to SE., through E., in 3½ to 9 fathoms, mud. The town is situated on the western slope of the Kanmanok Hills at a good height, and presents from the sea a very picturesque aspect; it is defended by a fort with bastions at the angles.

Point Cruz, 4½ miles south of Point Laon, is of no great height, rocky and underworn, and presents the appearance of a wall. A ledge extends to 2 cables from it, with 11 fathoms at the edge, offering bad anchorage.

Maribojo Bay, in the elbow which the coast forms east of Point Cruz, is foul, and lined by a steep reef extending ¾ of a mile before the river Abalan, and, continuing along the coast, joins the reef of Panglao Island. The town of Maribojo, in the center of the bay, is on ground of slight elevation.

Shoal.—At 3 miles SE. of Point Cruz and at 1 mile from the coast there is a small shoal of 33 yards extent, surrounded by 9 fathoms, and with 27 to 36 fathoms at a cable's distance.

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River Abalan.—The mouth of this river is of good width and there are 5½ feet on the bar at low water; the bar is generally marked by stakes. The north point is flat and covered by mangroves, and has a reef off it; the south point has a little rocky islet off it, covered by mangroves. The town of Paminuitan is on a little hill near the sea.

Panglao Island is low and flat, having only one little hill on it; it is almost joined to Bohol Island, as the channel that separates them dries at low water; a reef extends off it 4 miles to the SW. There is no anchorage off the island. Point Duljo is sandy and flat, and may be recognized at a distance by a group of cocoanut palms on it; it is clean and steep. The reef on the north side is also steep. Point Bolud is flat and sandy, with a fort upon it. Point Bikin is steep, with a flat crown.

Balikasai Island, bearing SSW. 3½ miles from Point Duljo, is small, flat, clean, and steep-to. The channel between it and Panglao Island is deep, no bottom being found in it with 110 fathoms. In keeping this channel it is better to keep near Balikasai.

Cervera Rock is 2 cables long, NE. and SW., and has 13 feet, coral and sand, on its shallowest part. It can be distinguished in daylight by the color of the water. From the rock, Point Tahuruk (Panglao Island) bears N. 60° W.; the mount NE. of Panglao, N. 4° E.; and the south extreme of Pamilakan Island, N. 82° E.

Pamilakan Island, lying S. 80° E. of the south point of Panglao, is of no great height, and its coast is foul. The natives of Bohol resort to it to fish bêche de mer and turtle.

Tagbilaran Strait is of little importance, as it can only be navigated by vessels drawing less than 6 feet. The entrance is from westward, and is generally marked by stakes. The town of Tagbilaran is engaged in agriculture and turtle fishing.

SOUTH COAST.

The south coast of Bohol is very steep, and may be approached with safety, as the reef that fringes it is very narrow and very steep, but the little bays at the mouth of the rivers on this coast afford no good anchorage. The reef that borders the south coast continues round the Bay of Guindulman, and is very steep; to the westward of some islets and rocks at the head of the bay there are 3 fathoms water, and 23 at a

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very little distance from the shore. From Point Napakao to the point off Mount Pugatin the coast appears clear and steep.

EAST COAST.

Kobton Bay, to the northward of Mount Pugatin, is filled by a reef, which leaves only a narrow opening 5 cables wide between the islets Lumittis and Tabon. This reef, which begins a mile to the southward of Point Namanuko, continues to the northward as far as Lapinin Island, bordering the coast at a short distance from it. The edge is steep, with soundings of 5½ to 9 fathoms near it.

Shoals.—A circular shoal of sand and rock, little more than a mile in diameter, and covered by 1¾ fathoms water, lies 7 miles north of Namanuko; close to its eastern edge there are 37 fathoms. A small circular shoal, with 11 fathoms on its eastern edge, also lies SE. of Tintimin Islet, and N. 30° E., distant 1½ miles from the point between Tintimin Islet and Point Libal. A third small, steep shoal is situated in the little bay south of Tintimin.

Sikijor Island is not very high. Its surface is very broken, and rises to a central peak. Mount Kudtingun, which is NE. of the central peak, is 1,394 feet high. The island is 14½ miles long and 11 miles wide. The productions are tobacco of a superior quality, rice and maize (though hardly sufficient for consumption), manila hemp, and good cacao, which are bartered for wax.

Point Sandugan.—The northern part of the island is very low, and surrounded by a reef of 1 cable width. A conspicuous little hill lies to the south of it and serves to mark it. The coast from Point Sandugan to Port Kanoan, 3 miles to the south, is very foul and steep near the shoals.

Port Kanoan is very small, and is the only port of refuge in the island. The total depth of the port is 6 cables, but a sand flat at the head, which dries at low water, reduces the available part of it to 4 cables. From the northern point of entrance a reef extends 1⅓ cables to the westward, with 4½ fathoms at its edge, and skirts the north side of the port; the southern entrance point and south side of the bay are bordered by a reef ⅓ of a cable wide. The soundings at the entrance are 14 fathoms, lessening to 3½ fathoms off the mole.

Tides.—Off Point Sandugan the tidal streams are very strong. The flood tide runs to the west and the ebb to the

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east; but on the northwest coast of Sikijor there is an eddy tide in the contrary direction, which does not extend to 2 miles offshore.

Points Tongo and Pasigajon are low and surrounded by a reef, which advances in some places as much as a mile from the shore. This reef is difficult to see, and is dangerous to approach, for soundings show no bottom with 110 fathoms at a cable's distance. The coast should not be closed within 2 or 3 miles. Point Makapilai is clean and peaked. With the exception of this reef on the west coast, the shores are clean and steep-to. On the south side the water is reported to be very deep near the shore, but no soundings are shown on the chart. Lasi Bay is clear, but deep. Minalunan Bay is almost closed by a reef.

Shoal.—Off the northeast coast, 2 miles north of Point Dakit, there is a small bank of rock, covered by 3½ fathoms, with very deep water around it. From this shoal Mount Kudtingun bears S. 66° W., and Point Lumango N. 58° W.

CITIES AND TOWNS.

Albuquerque.—Population, 6,604.

Anda.—Population, 4,036; situated 56 miles from Tagbilaran. It has highroads to Candabong.

Antequera.—Population, 5,842; situated 10 miles from Tagbilaran.

Badayon.—Population, 8,048.

Balilijan.—Population, 1,860; situated 16 miles from Tagbilaran.

Batuanan.—Population, 1,270.

Calape.—Population, 10,025; situated 26 miles from Tagbilaran.

Candijay.—Population, 7,872; situated 54 miles from Tagbilaran.

Canoan.—Population, 9,380; situated 31 miles from Tagbilaran.

Carmen.—Population, 3,300; situated 35 miles from Tagbilaran.

Catigbian.—Population, 2,141; situated 16½ miles from Tagbilaran.

Corella.—Population, 4,215.

Cortes en Bohol.—Population, 6,018; situated 6 miles from Tagbilaran.

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Dauis.—Population, 8,992; situated 1 mile from Tagbilaran.

Dimiao.—Population, 8,014; situated 22 miles from Tagbilaran.

Duero.—Population, 7,143; situated 42 miles from Tagbilaran.

García Hernández.—Population, 5,064; situated 34 miles from Tagbilaran.

Getafe.—Population, 3,397; situated 65 miles from Tagbilaran.

Guindulman.—Population, 8,063; situated 51 miles from Tagbilaran.

Inabanga.—Population, 9,957; situated 41 miles from Tagbilaran.

Ipil.—Population, 1,745; situated 47 miles from Tagbilaran.

Jagna.—Population, 1,162, the township having 13,491; situated 39 miles from Tagbilaran. There is a highroad to the towns of Duero and García Hernández.

Lacy.—Population, 6,448; situated 25 miles from Tagbilaran.

Lila.—Population, 4,470; situated 18 miles from Tagbilaran.

Loay.—Population, 7,169; situated 11 miles from Tagbilaran.

Loboc.—Population, 10,174; situated 15 miles from Tagbilaran.

Loon.—Population, 15,365; situated 16½ miles from Tagbilaran.

Maria.—Population, 5,415; situated on the island of Siquijor at a distance of 26 miles by sea from Tagbilaran.

Maribojoc.—Population, 10,852; situated 8½ miles from Tagbilaran. There are highroads to Loon, Paminuitan, and Antequera.

Panglao.—Population, 6,795; situated 10 miles from Tagbilaran.

San Juan.—Population, 5,979.

Sevilla.—Population, 5,920; situated 47 miles from Tagbilaran.

Sierra Bullones.—Population, 2,119; situated 44½ miles from Tagbilaran.

Signipi.—Population, 11,788.

Siquijor.—Population, 11,788.

Talibon.—Population, 7,321; situated 50 miles from Tagbilaran.

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Tubigon.—Population, 15,855; situated 28 miles from Tagbilaran.

Ubay.—Population, 3,552; situated 48 miles from Tagbilaran.

Valencia.—Population, 6,904; situated 26 miles from Tagbilaran.

Vilar.—Population, 6,665.

ISLAND AND PROVINCE OF CEBÚ.

This is the most important province of the Visayas, on account of its central position, the nature of its ground, and the industry of its numerous inhabitants. It is bounded on the north by the sea separating it from Masbate and Leyte, on the east by the sea separating it from Leyte and Bohol, on the south by the Mindanao Sea, and on the west by the Tañon Channel and the island of Negros. The area is 2,092 square miles and the population 504,076. Great mountain chains cross the island; the chief of these starts at the extreme north between Point Marab on the west and Baluarte on the east, and, continuing south between the two coasts, ends almost in the center of the island. Two other chains run along the coast, and one starts near Carcas, to the southwest of the city of Cebú, terminating on the south in Tañon Point. The coasts are rather high and the rivers of little importance.

The capital is **Cebú**, with a population of 35,243. It is the mercantile center of the islands, and is situated 460 miles from Manila. It is an Episcopal see, and has a good cathedral, Episcopal palace, casa real, court-house, and private edifices, simple but tasty; there is also a post office and telegraph station. On the south, and at the entrance of the channel, is the castle of Point Cauit, and north of this the tower of Mandaui; both these fortifications communicate with the capital by means of a wagon road, the city being midway between them. At the capital reside the politico-military governor, a secretary, judge and attorney-general, a number of public functionaries, a captain of engineers, and the captain of the port.

ITINERARY OF COAST OF CEBÚ—WEST COAST.

Bulalaki Point is low, rather steep, with a flat summit covered by trees and presenting to the north and south some yellow patches. Vessels of all sizes can anchor in the channel

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between this point and Chocolate Islet in 8 fathoms, mud, near the islet, and 2¾ fathoms, sand, almost touching the point.

Bantiki Point (Kandaga), the northwestern point of the island, about 4½ miles from Point Bulalaki, is very low; a shoal of sand projects ½ mile from it, with ¾ of a fathom on it; the coast between it and Point Bulalaki shows sand beaches and has good holding ground off it. The town of Kandaga lies S. by E. of the point.

The coast from Point Kandaga is very clear, with a depth of 4½ fathoms off it to the town of Paibai, or old Bantayan, but thence to Point Kauit a bank of 3½ fathoms extends to ½ mile from the shore.

Point Kauit, 6 miles SSW. ¾ W. of Point Kandaga, is very low and sandy, and is surrounded by a shoal of sand and rocks 2 cables wide, covered by 1½ fathoms. Abundant fresh water is obtained here from wells.

Jibitnil Island, less than a mile from Kauit, is 2 miles long, north and south, and clear, ending to the south in a point of sand. The passage between it and Point Kauit is less than a mile wide, and 4½ to 25 fathoms deep.

Daijagon Bay is very foul; the reefs reduce the available space to a width of 1 mile, in which there is anchorage in 8 fathoms. The shores are low and covered by mangroves. From the interior of the bay a narrow, tortuous estuary communicates with Bogo Bay on the eastern coast, reducing the isthmus here approximately ½ mile wide to a neck of land 1 cable in width. The natives pass their baratos across from one coast to the other in both monsoons to avoid going round to Point Bulalaki. The canal is said to be filling up, and had a depth of only 4 feet of water in 1880.

Point Magtulinok is a narrow tongue of sand on which are several little, steep, flat-crowned rocks, with a shoal of 2 cables' extent at its end.

Point Makao is low, and clear on its north part, but from its south part a reef extends from before the shallow river Lambusan to ½ mile from the shore, with 7 fathoms at its edge.

Jaliki River can be entered by small coasters through a passage of 3½ fathoms between the reefs; the depth on the bar is 3 feet at low water. The northern point is of black rock, underworn by the currents. The coast from Jaliki River to Tubukan River is bordered by a reef ¼ of a mile wide.

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Batauan Bay is very small, and the greatest depth inside is only 3 fathoms; the entrance points are higher than the rest of the coast in sight about this part.

Point Langugon is low, clear, and steep-to, and offers anchorage on its southern side. Tubukan River is of no importance, and the bay is filled by a reef which extends round the western point to a distance of ½ a mile.

Buenabrigo Point is low, sandy, and very steep-to; on the northern side is a rivulet of good water, and on the south side there is anchorage sheltered from the NE. Between Buenabrigo Point and Balamban Bay the shore is fringed by a reef which advances in one place as much as 1½ miles. Balamban Bay is foul and affords no accommodation.

Point Tajao is low, clear, and steep-to, with 23 fathoms off it; vessels can anchor south of the point in 1¾ to 7 fathoms, sand. The tidal streams that enter Tañon Strait from the north and from the south meet about off this point.

Tajao Bank, 1½ miles SSW. ½ W. of the point, is 1 mile long, NE. and SW., and ½ mile wide; it is a bank of rock, and uncovers at low water; the channel between it and the coast is unsafe. From Tajao Point to Point Gorda the coast is fringed by a reef which extends in some places to 1 mile from it.

Point Gorda, the highest on the coast, is steep, with a flat crown; there is a vantay on it.

Barili is a town of 17,000 inhabitants, but the river has only 2 feet on the bar, and the creek at the entrance, which is ⅓ of a mile wide between the points, is considerably reduced by reefs from both sides; the depth in the creek is 9 to 2½ fathoms.

Point Dumanjok is high, with mangroves at the base, where a ledge extends 2 cables to the NE. At a distance of 2 cables from the ledge the soundings show no bottom with 110 fathoms. The bay to the eastward has a depth of 17 fathoms at the entrance, lessening to 5 fathoms near the shore. A town of 600 inhabitants is at the bottom of the bay, near a small river of good water.

Point Kopton is low, of dark rock much underworn; it is surrounded by a reef ½ mile in width, which quite fills up the bay to the eastward. The islet Pescador, 3½ miles SSW. of Point Kopton, is surrounded by dark rock, with no vegetation on it; its sides are steep-to.

Badian is a town that can only be approached in boats at high water, as the wide bay in which it is situated is lined

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with salient reefs. There is no passage between these reefs and Badian Island.

From Badian to the southern end of Cebú Island the coast is clear, of moderate height, and so steep that anchorage can be had only very close to the shore in various places where there are towns. The town of Kinatilan is in an angle of the coast, near the hill Tuburan. Before the town the depth is 7 fathoms at 1 cable distance from the shore.

Point Kolasi is low, rather craggy, and white, with a telegraph on it. From here to Point Liloan, 2½ miles to the southward, the coast is sandy and very steep, with rocks close to the shore.

The tidal streams are very strong off this point.

Point Liloan, 2½ miles south of Point Kolasi, is sandy and steep, with some rocks, covered by 1½ fathoms, at ¼ of a cable from it. On the point is a stone fort, and a signal station which communicates with Kolasi. Vessels can anchor near the point in 7 to 14 fathoms, but the bottom is very steep and the tide streams very strong. Between Point Liloan and Point Tañon, in flood tide, an eddy current in the opposite direction passes very close to the coast.

South entrance of Tañon Strait.—From Point Liloan the coast trends E. by S. for 2½ miles to Point Tañon, and consists of sand beaches, with a depth of water 5½ fathoms very close to and 17 fathoms at a distance of 1 mile. Point Tañon is low and sandy, with a narrow ledge of rock projecting to 1 cable from it.

Tides.—The flood stream from the Strait of Surigao, passing westward between the islands Bohol and Sikijor, strikes the coast of Cebú at the Point Dalaguete, and divides into two branches. One turns NW., and the other arm, turning to SSW., meets with another part of the stream that was deflected from Negros Island about Point Damaguete. The two reunited enter Tañon Strait by the southern entrance, with a velocity that reaches 5 to 6 knots in springs and 2 to 3 at neaps, with violent races and tide whirls. The stream here flows northward, lessening in force as the strait widens, until it reaches the parallel of Point Tajao, where it meets the flood stream from the northward. At the northern entrance of Tañon Strait the tide, even at spring, does not reach a speed of 3 knots. The ebb stream is directed the reverse way from the parallel of Point Tajao. As a resultant

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of the tides there is always, on the southeast coast of Negros, between the points Damaguete and Bombonon, a constant current to the south, with varying velocity.

EAST COAST, FROM NORTH TO SOUTH.

Point Bulalaki and Chocolate Islet have been described above. From Point Bulalaki to Bogo Bay, 13 miles SSW., a reef of sand and rocks fringes the shore, and extends as much as 1½ miles from it, at one place, about 3 miles south of Bulalaki; the depth over this reef is ¾ to 1¾ fathoms, and at its edge from 4½ to 14 fathoms, fine sand.

Bogo Bay is nearly filled by shoals that advance from its sides, leaving only a narrow channel to the head of the bay, where the town of Bogo is situated. The shoals are reported to show clearly, and to be marked by bushes. A narrow neck of land separates Bogo Bay from an estuary on the west coast of Cebú, and the natives pass their baratos across in preference to going round Point Bulalaki.

Anchorage may be obtained in Bogo Bay in bad weather, but it is recommended not to go into less than 4 fathoms, as the water shoals rapidly, and the bottom consists of sand and rock.

Nailon (or Mailon) Point is low and surrounded by a narrow reef; the coast between it and Point Saak, which lies S. by E. 4½ miles, is clear and steep-to, and consists of sand beaches interrupted by rocks and mangroves.

Point Saak is low and wooded, clear, and steep-to. A low range of hills lies 2 or 3 miles inland, and shows a hill 1,122 feet above the sea, WSW. of Point Saak.

Capitancillo Islet, which lies east 2½ miles from Point Saak, is low and circular in form, about a cable in diameter, with a few trees on it, and a sand beach on its western side; this side is clear, but on the northern side there is a narrow reef, and on the eastern and southern sides shoals extend to a distance of ½ mile, with 18 fathoms close to the edge.

At a distance of 1 mile N. by E. of Capitancillo Islet is the southern end of a shoal of sand and rock that stretches 1½ miles NNE.; this shoal is covered by 1¼ fathoms on the shallowest part, with a depth of 18 to 37 fathoms round its edges, and 32 fathoms in the channel that separates the shoal from Capitancillo Islet.

Between these dangers and the coast of Cebú there is a clear channel with no bottom at 55 fathoms.

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Kalangaman Islet lies 2 miles N. 71° E. of Point Nailon; it is small and low; on its east and west sides are shoals which dry at low water; and about a mile to the SW. of the islet there is a shoal ½ mile long, NE. and SW., and ⅓ of a mile wide; the depth over it is 1¾ fathoms, and round its edges 14 to 18 fathoms.

Danger.—The Spanish steamer *Ocmoc* struck soundings in 12 feet in the channel between Kalangaman and Capitancillo islets. It being night, no bearings were taken; it is shown on chart 2578 as lying 7 miles E. ½ S. of Point Nailon; position doubtful.

The channel between Capitancillo and Cebú is generally used by steamers.

Point Bantulin, bearing S. ½ E. 5 miles from Point Saak, is of uniform height, rocky, clear, and steep-to. To the NW. of the point is Tabagon Bay, in which there is anchorage in 3¾ to 9 fathoms, sand and mud, before the town of Tabagon. The shores of the bay are covered with mangroves, and must not be approached within 1 cable.

Coast.—From Point Bantulin the coast trends S. 20° W. for 5½ miles to Point Bugod; it is low and steep-to and of no great height, consisting of sand beaches separated by rocky bluffs which are surrounded by rocks to the distance of ½ cable. The river Jamuguit enters the sea about 2 miles north of Point Bugod; at the mouth of the river, very close to the shore, there are soundings of 6 fathoms, sand.

Point Bugod is low, rocky, and steep-to; the coast between it and Point Pinulakan, 7½ miles to the southward, is of medium height, and consists of sand beach with good depth and anchorage off it. On this coast there are three towns: Bugod is on a rising ground surrounded by hills; Bacio is very small; Catman contains 6,098 persons; the depth of water off this town is 6 to 22 fathoms, sand. Point Pinulakan is of no great height, clear, and steep-to. Luyan, to the south of it, is a town of 500 people occupied in cutting wood, which is sent to Cebú.

Point Katadman, which lies S. ½ W. 21 miles from Point Bantulin, is very flat and covered by mangroves; there is a signal station on it, and a shoal surrounds the point, extending from Danao River on the southern side, as far as the little port of Bugut on the northern side; on the outer edge of this reef there are 8 to 17 fathoms, sand and mud.

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Port Bugut, or Carmen, is a small nook situated 3 miles N. by W. ½ W. of Point Katadman, sheltered by the low islet Pupú. The eastern side of this island is foul, and there is no passage between the northern side and the shore. The channel leading to the port is on the south side of the islet, and is reduced by shoals on both sides to a width of 5½ fathoms; these shoals wash at low water, and are marked by bushes. Within the port the depth is 4½ fathoms, lessening toward the beach, which is low and covered by mangroves. The town is on the south side, and consists of about 20 houses. In December, 1879, two Spanish gunboats rode out a typhoon in this port.

Directions.—In order to enter the port the land should be closed to about a mile from the shore, care being taken to clear the reef that borders the coast, and when the fort at the bottom of the port bears WNW. a course should be steered for it on that bearing, which will lead clear of the shoals on either side. Without a pilot it would not be safe to attempt to enter at night.

Coast.—From Point Katadman to Danao the coast is foul, and the anchorage off Danao, which is a large town, can not be recommended. From Danao to Point Bagakai the shore is sandy; and, except about Point Dapdap, where the water is shoal, offers anchorage in good depths to vessels of all sizes during the southwest monsoon. Liloan, situated on the left bank of the river of the same name, is small, and with the town of Dapdap numbers only 8,380 inhabitants. The river can be entered by lanchas at high water.

Point Bagakai, bearing south 9 miles from Point Katadman, is low, ragged, and surrounded by rocks.

Steering for Cebú from the northward, Point Bagakai when first seen looks like an island, as there is a round-backed hill upon it about 150 feet high. Maktan and Olango are both low.

Lights.—On Bagakai Point a fixed white light is exhibited on a circular tower, 46 feet above the sea and 21 feet above the ground, visible at a distance of 9 miles. The light-keeper's house is of nipa, and separated from the tower. The light is very difficult to distinguish, the fishing lights in the vicinity being very numerous and much brighter.

A harbor light is exhibited from a light-house on Third Vantay Point, northern extreme of Maktan Island. It is a fixed red light, elevated 39 feet above the sea, and should be visible

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in clear weather from a distance of 7 miles. The light-house, 25 feet high, consists of an iron tower, painted gray; the keeper's dwelling is near it.

Coast.—From Point Bagakai the coast trends SSW. for 3½ miles to the northern point of a shallow bay at the entrance of the strait leading to Cebú. Near this point is the northernmost buoy marking the entrance to Port Cebú, shown on the plan of the port as lying NW. by N. 1½ miles from the north point of Maktan Island. On both sides of the entrance there are fishing stakes which serve to mark it.

CEBÚ PORT is formed by the channel which separates Maktan Island from Cebú. The practicable channel is 2 cables wide in the narrowest part, which is abreast of Mandani tower, and 3 cables wide before the town of Cebú; the least depth in it is 4½ fathoms, increasing in many places to 9 fathoms. It is marked along its whole course by a series of buoys, painted in vertical stripes; those on the Cebú shore are black and white, and those on the Maktan shore are red and white. The presence of these buoys must not be relied upon, as in 1881 a number of them had disappeared, but in their absence the tide rips on the edges of the shoals and the color of the water will indicate the passage. In daylight the navigation presents no difficulties, but on a dark night, when the edges of the reefs can not be seen, it is not safe.

The towers of Mandani on the Cebú coast, and of Opon, on Maktan Island, are white. The bank which extends NE. of Mandani tower is covered with grass and is generally dry.

The town of Mandani lies near the beach, in the bight of the coast westward of the tower.

Maktan Island consists of an old coral reef, raised a few feet (8 or 10 at most) above the present sea level. At the northern part of the island, where a convent stands, a low cliff fringes the shore, being an upper stratum of the upheaved reef. The raised reef is here preserved, but over the portion of the island immediately fronting Cebú it has been removed by denudation, with the exception of a few pillar-like blocks which remain, and which are conspicuous from the anchorage. The surface is scooped out into irregular basins and sharp projecting pinnacles and covered in all directions with mud, resulting from the denudation. Nearly all the island is covered by mangroves, but on the part left dry there are plantations of cocoanuts.

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From the northern point of the island, near the entrance to Port Cebú, a ledge extends 6 cables to the NE. by E., the edge of which is generally marked by fishing stakes; the northwest shore is fringed by a narrow reef, but on the south side the reef stretches out to 2 miles from the island, with 5½ to 8 fathoms at the edge. The northeast side is clear and steep-to; the channel between Maktan and Olango islands is 1½ miles wide, clear and deep.

The only town on the island is Opon, on the west coast, SW. of Mandaui Point in Cebú. It was here that Magellan was killed in 1521, after making the first passage across the Pacific.

The town of Cebú is the most ancient in the Philippines; it is the seat of government of the Visayan Islands, which include Cebú, Bohol, Panay, Negros, and Leyte, and it is the residence of a bishop. It is built on a large plain at the foot of the chain of hills that traverse the island throughout its length, and is a well-constructed, thriving place; the merchants' quarter is situated along the port, and includes some well-built stone houses, though many are of old construction. The huts of the Malays, for the most part fishermen, are on the beach, and form the west part of the city. The fort is a triangular edifice of stone, painted red, with an open square in front of it.

Coal.—The supply is very small, chiefly Australian; price, $16 per ton. The coal station is at Kauit Point, 1¾ miles SW. of the town; the coal is brought off in bulk, and the process of coaling is slow. There are beds of coal in the island, but only the surface coal is worked.

Anchorage.—The best anchorage is SSW. of the fort in 5 to 7 fathoms, mud; nearer the southern reef there is more water, but the bottom is hard.

Tides.—It is high water, full and change, at noon; springs rise 7 feet. The strength of the stream is 2 to 3 knots at springs; vessels should moor, as the *Challenger*, at single anchor, surged very much at the night tides.

Southern entrance.—Kauit Point is a tongue of sand which juts out about 9 cables to the NE. from the coast, with rocks at its sides, and trees and a ruined castle on it. At high water it appears as a low islet, and is not distinguishable until close-to. The castle lies SW. 1¾ miles from Cebú fort. Between Point Kauit and Point Lipata, which lies SW. ½ W. 3 miles from Point Kauit, the shore is sandy, with good holding ground at 3 cables from it, in 6 fathoms.

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Campanario Shoal, covered by 5 feet of water, lies halfway between Kauit castle and the eastern edge of Lipata Bank; it is marked by a buoy. From it San Nicholas church bears N. 13° E., and Kauit castle N. 6° E., distant $9\frac{1}{2}$ cables.

Lipata Bank lies in the middle of the southern entrance to Port Cebú, between the coast of Cebú and the reef off the southwest point of Maktan Island. It is of oval form, 3 cables in extent, and uncovers at low water. A bank covered by 8 feet of water extends north and northeast, the outer edge of which is marked by buoys.

Narvaez Bank, between Lipata Bank and the coast of Cebú, is of coral, 2 cables long, covered by 5 feet of water and marked by a black buoy with a ball. Both Lipata and Narvaez banks, as also the edge of the reef off Maktan Island, are marked by fishing stakes, but as the stakes are being constantly shifted, too much confidence must not be placed in them as marks for the edge of the banks.

Lights.—On Lipata Bank a fixed red light is exhibited on a tripod elevated 26 feet above the sea, and visible in clear weather to a distance of 6 miles.

On Lanis Point, the southwest point of Maktan Island, a fixed green light is exhibited on a tripod elevated 26 feet above the sea, and visible to a distance of 6 miles.

Leading mark.—The dome of San Nicholas church bearing N. $\frac{1}{4}$ E. will lead in mid-channel between Lipata Bank and the reef off Maktan. On this bearing the church is in line with the central apex of a triple-peaked hill 10 or 12 miles to the northward of the town.

Lipata Point is flat and sandy; not far from it is a stone fort, and the town of Talisai. A reef projects about 6 cables south of the point, with $4\frac{1}{2}$ fathoms at its end. This is about the position assigned to Lagundi West Shoal, bearing SW. by W. $\frac{3}{4}$ W. $1\frac{8}{10}$ miles from the center of Lipata Bank, and it is probably the same; but the name Lagundi does not appear on the Spanish chart. The shoal is covered by $2\frac{3}{4}$ fathoms and is marked by a buoy with staff and ball.

Lagundi Shoal, having over it $2\frac{3}{4}$ fathoms, bears SSW. $1\frac{1}{4}$ miles from the center of Lipata Bank, and is marked by a buoy with staff and ball. Another small shoal of sand covered by $2\frac{3}{4}$ fathoms lies SW. $1\frac{1}{4}$ miles from Lipata Point.

Tambon Shoal, having over it 4 fathoms, bears SE. by E. $\frac{1}{4}$ E. $2\frac{1}{3}$ miles from the center of Lipata Bank; it is marked by a buoy with staff and ball.

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Directions for navigating from Jintotolo Channel to Cebú.—From a position 2 miles south of Jintotolo a course of S. 62° W. will lead 1½ miles clear of North Gigante and north of Tanguingui Islet to midway between Malapascua and Chocolate islets, but allowance must be made for the set of the currents, which varies according to the strength of the monsoon. In the daytime Malapascua can be passed on either side, but at night it is advisable to pass to the eastward, giving a berth to the dangerous rock which extends about ¾ of a mile off its south point. From Malapascua a course should be steered to pass between Capitancillo and Kalangaman islets; a S. ¾ W. course then leads to within 2 miles of Bagakai light, at the northern entrance to Port Cebú; or, from Malapascua steer to pass between Capitancillo and the coast of Cebú, as the channel that separates them is clear and deep.

The narrowest part of the entrance to Port Cebú is between Mandani Point and the mole of Opon town in Maktan, and there the depth will lessen to 4½ fathoms. A vessel should keep on the Opon side to avoid the bank on the coast of Cebú. When the *Challenger* entered the port in 1875 the edges of the shoal were by no means readily distinguished, for muddy water extended right across the narrowest part of the channel.

Having passed the mole of Opon a vessel should steer, in daylight, for the point of the fort of Cebú; but at night, if obscure, on a course S. 64° W. This course will clear the shoals of the north coast, keeping at the same time a distance of 2 miles from the shore of Maktan Island, to the anchorage off Cebú.

To go out from the anchorage by the southern channel a SW. course should be steered until the dome of the church of San Nicholas bears N. ¼ E., when a course S. ¼ W. leads through the fairway between Lipata Bank and the reef of Maktan Island. Having cleared the reef and Lipata Bank a course SSW. ¼ W. can be steered to pass 4 miles west of Kalibao Island.

SOUTHEAST COAST.

From Point Lipata to Point Tinaan, WSW. 6 miles, the coast forms a bay, in the center of which is the town of Minglanilla; the entire bay is obstructed by shoals which extend to 1½ miles from the shore; the channels between these shoals, and between them and the coast, are less than 3 fathoms deep.

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Naga is a large town with a handsome church. Steam vessels and coasting craft using the south entrance to or from the port of Cebú make Naga the point of entrance and departure.

Anchorage, but of small extent, may be obtained off Naga in 4 to 7 fathoms, but care must be taken to avoid a small sunken rock having over it 2¾ fathoms, with 9 fathoms within a boat's length.

Tinaan or Tuiaan Anchorage, about 1½ miles SW. of Naga, in front of a small village without a church, is difficult to distinguish from seaward. It is formed by the coast and a shoal ½ mile SE. of the village. This shoal is 6 cables long, ENE. and WSW., and 2 cables wide; its extremities and the points of the bay are marked by stakes. In the middle of the bay there is a depth of 11 fathoms, sand, lessening gradually to 2¾ fathoms at 1 cable from the wharf. The north entrance is easier and cleaner than the south entrance, in the middle of which there is a patch of 5½ fathoms. Tuiaan is the port of shipment of coal from the mines of Uling and Alpako.

Coast.—From Tuaian to the salient point of Argao, the coast is fringed by a narrow reef which extends from it more than 2 cables at the most; it is very steep, with more than 50 fathoms depth at a short distance from it. In passing along this part of the coast of Cebú it is advisable not to keep too near the land.

San Fernando is a town situated some distance inland from the coast, and about 3 miles SW. of Tinaan.

Karkat Point is low and fringed by the coast reef of 2 cables' width, with 20 to 40 fathoms near it.

Karkat Bay has an islet in the middle of it, which, with the shoals projecting from the shore, forms a little sheltered port. The church at Karkat is situated conspicuously on a hill NNW. of the islet. The entrance channel to the port runs NW. and SE., and has a depth of 4½ to 6½ fathoms. Within the port there are 7 fathoms. The best anchorage is near the north part of the islet. An acquaintance with the locality is necessary to enter, as the sides of the entrance are not marked by bushes. The shores are very low and covered by mangroves.

Sibonga (ch. 45, p. 254), 4 miles to the south of Karkat Bay, offers good anchorage sheltered from westerly winds, and may be known by a church lately constructed. The anchorage

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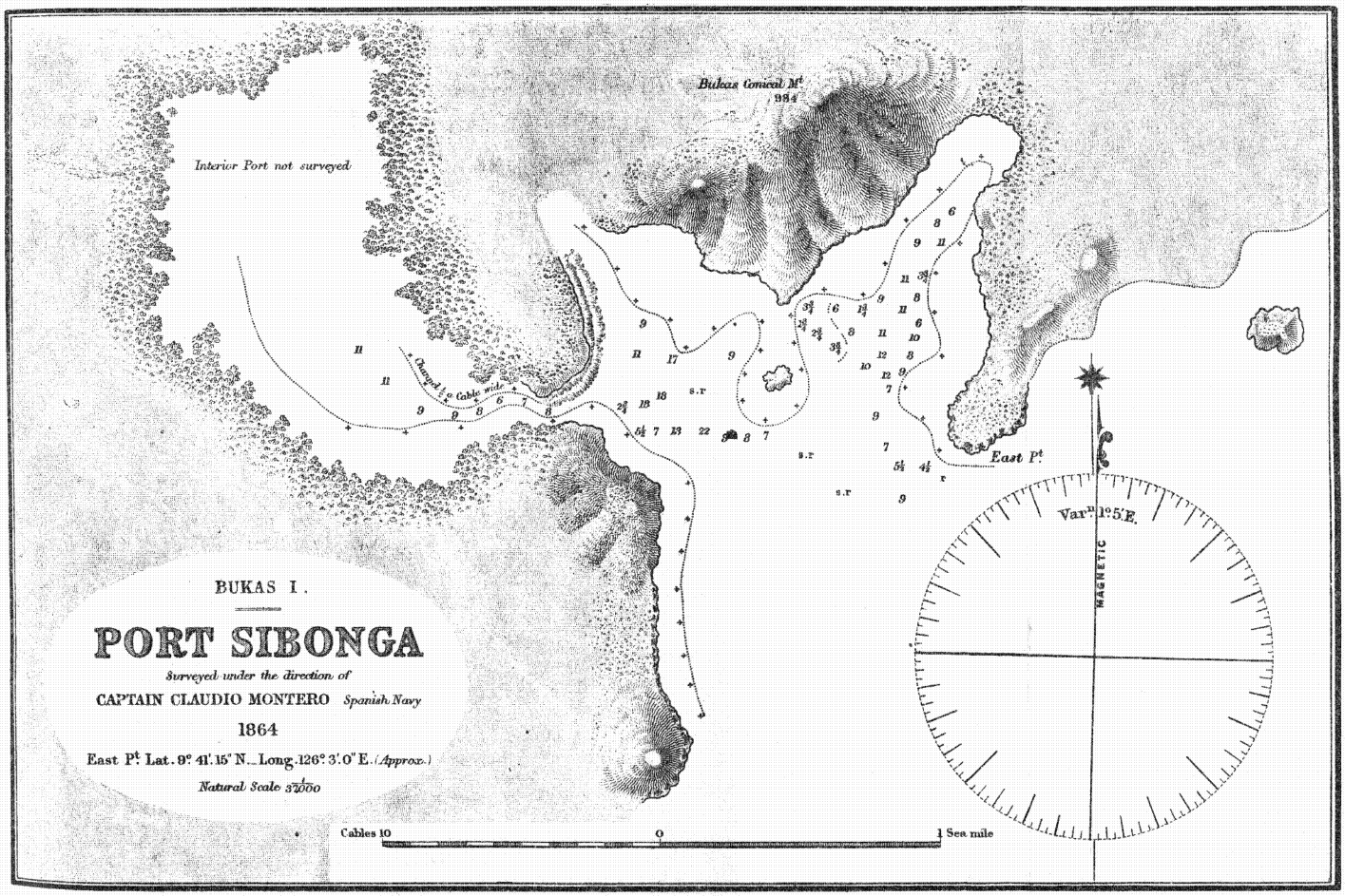

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is in 4 fathoms, sand, at equal distance from the court-house and the church; northward of this position the bottom becomes rocky, as also the coast as far as Karkat Bay.

Argao Point, 8 miles south of Sibonga, offers anchorage in from 4 to 7 fathoms, sand, sheltered from north and northeast winds. Small vessels load here in both monsoons, choosing their anchorage north or south of the point, as most convenient. The church at Argao is a most conspicuous building. Supplies may be obtained at Argao by applying to the local authorities.

Point Dalaguete, 9 miles SW. ¾ W. of Point Argao, is flat and sandy, clear and steep-to. Anchorage may be obtained north and south of the point in 3½ or 18 fathoms, sand. The town of Dalaguete may be known by a conspicuous church, visible at a great distance both from the north and from the south. The coast between Points Argao and Dalaguete consists in some places of clean and steep sand beaches, and in others of mangrove patches with shoals extending to a distance of one cable from the shore.

Tides.—The flood stream from the eastward strikes the coast about this part of Cebú and is divided into two streams which follow the coast, one to the NNE. through the channels on either side of Maktan Island, the other to the SSW. passes round to the south end of Cebú and enters Tañon Strait.

The coast from Dalaguete Point to Boljon is low, with steep sand beaches interrupted by rocky bluffs; at mid-distance are the town and shoal of Mambagi; the shore before the town is clean and a depth of 12 fathoms off it.

Mambagi Shoal is a shoal of sand and rock ⅓ of a mile long and a little more than a cable wide, with 3½ to 11 fathoms round its edges. It lies 2 miles off the coast and 2⅓ miles NE. by N. of Boljon Bluff.

Boljon Bay is small and very steep; there are 12 fathoms within 100 yards of the shore; a little to the north of the bay is a white peaked rock of a good height (Boljon Bluff), on which is a little stone tower used as a signal station. The town of Boljon is surrounded by a wall and fortifications.

Point Yuisan, 4½ miles south of Boljon, is low, and ends in sand and rocks close to the shore; the village contains only 350 persons.

Yuisan Shoal, of sand and rock, awash at low water, with 2¼ to 5½ fathoms round its edge, is 2 cables long, NE. and SW.,

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and 1½ cables wide. It lies 1½ miles offshore. From it Yuisan church bears N. 21° E., and the north point of Sikijor Point S. 33° E.

Point Oslob, bearing SW. by S. 4 miles from Point Yuisan, is sandy and low, and has on it a fort of white stone, visible a great distance. It is surrounded by a narrow reef of only a cable's width. On the south side there is anchorage in 3½ to 9 fathoms. The coast between points Yuisan and Oslob is sand beach fringed by a reef ¼ of a mile wide, steep-to. From Point Oslob to Point Tañon, which lies SW. 8½ miles from it, the coast land is high, with sandy beaches and rugged bluffs of white rock, and is very steep.

Point Tañon, the southern point of Cebú Island, is low, sandy, and surrounded by a narrow reef, little more than a cable wide. There is anchorage south of the point in 5½ to 7 fathoms, sand; but it is exposed to the force of the tide streams that enter and leave the Strait of Tañon. The church and town of Tañon are on high ground near the point.

Sumilon Island lies ENE. 3 miles from Point Tañon, and 1½ miles off the coast. It is ⅔ of a mile long and 177 feet high; its shores are clean and steep.

Bohol Island is of oval figure, 47 miles in length, NE. and SW., and 34 miles wide, N. and S.; the southern part is hilly and rocky, but the northern part has good tracts of level ground. The height is about the same as that of Cebú, the culminating point being Mount Kopton, near the northeast extremity; its height, 10,150 feet in the Derrotero, but 2,870 on the chart. The coasts of the island are bordered by reefs, which on the northern side extend from the NE. to the SW. of the island at a distance of 12 miles.

The productions of the island are cacao, tobacco, cotton, manila hemp, rice, maize, and sugar cane, and its forests furnish excellent wood. The district of Bohol includes the island of Sikijor and Panglas; the seat of government is Tagbilaran, on the southwest coast.

Lapinin Island, on the northeast extremity of Bohol Island, is separated from it by a narrow channel 3½ to 7 fathoms deep. It is 8 miles long, flat, and covered by brambles. A narrow, steep coral reef surrounds it. The islet Tinuibo, lying SE. by S., 2½ miles from the northern point of Lapinin Island, is small, clean, and steep-to. Between the islands there are 12 fathoms water.

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Danajon Bank forms the outer limit of the coral reef that borders the north coast of Bohol, which is composed of a great number of shoals and islands, between which only small vessels with a good local pilot can navigate, and a description of which would be long and diffuse. The eastern end of the bank, sometimes called Adam and Eve Bank, lies 10 miles NE. ¼ E. from the north point of Lapinin Island, and 2 miles from the coast of Leyte.

The bank has two openings through it; the northern one is in a line between Mount Kopton in Bohol and Mount Three Peaks in Poro Island (Kamotes); and the northwestern one lies N. 60° W. of Mount Corte; both of these openings have a width of about a mile and a depth of 8 fathoms. On the bank, at great intervals, there are small islands covered by bushes and mangroves.

CITIES AND TOWNS.

Alcantara.—Population, 4,080.

Alcoy.—Population, 5,040; situated 44 miles from Cebú.

Alegria.—Population, 11,460; situated 90 miles from Cebú.

Aloguinsan.—Population, 3,993.

Argao.—Population, 34,050; situated 33 miles from Cebú.

Asturias.—Population, 6,000; situated 109 miles from Cebú.

Badian.—Population, 9,409; situated 51 miles from Cebú.

Balamban.—Population, 9,610; situated 43 miles from Cebú. There are highroads to Joledo on the south and Asturias on the north.

Bantayan.—Population, 10,016; situated 62 miles from Cebú.

Barili.—Population, 20,914; situated 52 miles from Cebú.

Bogo.—Population, 16,350; situated 69 miles from Cebú. It has a good harbor, the only one in the province.

Boljoon.—Population, 7,413; situated 57 miles from Cebú.

Borbon.—Population, 2,805; situated 51 miles from Cebú.

Carcar.—Population, 30,300; situated 23 miles from Cebú.

Carmen.—Population, 6,673; situated 25 miles from Cebú.

Catman.—Population, 6,098.

Compostela.—Population, 4,393.

Consolación.—Population, 4,616; situated 7 miles from Cebú. There are highroads to the neighboring cities.

Córdoba.—Population, 5,009.

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Daan Bantayan.—Population, 8,530; situated 103 miles from Cebú.

Dalaguete.—Population, 21,323; situated 49 miles from Cebú.

Danao.—Population, 15,483; situated 4 miles from Cebú.

Dumanjug.—Population, 13,171; situated 42 miles from Cebú. There are three highroads.

Ginatilan.—Population, 12,144.

Liloan.—Population, 8,380.

Malabuyoc.—Population, 13,113; situated 83 miles from Cebú.

Mandaue.—Population, 15,307; situated 41 miles from Cebú.

Medellin.—Population, 8,221.

Minglanilla.—Population, 6,310; situated 5 miles from Cebú.

Moalboal.—Population, 9,509.

Naga.—Population, 10,926; situated 11 miles from Cebú.

Nueva Cáceres.—Population, 3,339; situated 42 miles from Cebú.

Opon.—Population, 11,506; situated 9 miles from Cebú.

Oslob.—Population, 6,013; situated 78 miles from Cebú.

Pardo (El).—Population, 10,647.

Pilar.—Population, 4,268; situated 38 miles from Cebú.

Pinamungajan.—Population, 5,378.

Poro.—Population, 7,000.

Ronda.—Population, 4,394; situated 434 miles from Cebú. There are highroads to the neighboring cities.

Samboan.—Population, 10,422; situated 68 miles from Cebú.

San Fernando.—Population, 12,155; situated 9 miles from Cebú.

San Francisco.—Population, 6,567.

San Nicolas.—Population, 17,800.

San Remigio.—Population, 6,192; situated 69 miles from Cebú.

Santa Fe.—Population, 3,102.

Santander.—Population, 4,686; situated 88 miles from Cebú.

Sibonga.—Population, 23,455; situated 31 miles from Cebú.

Sogod.—Population, 6,719.

Tabogon.—Population, 8,631.

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Talambang.—Population, 6,226; situated 1 mile from Cebú.

Talisay.—Population, 19,000; situated 6 miles from Cebú, to which there is a highroad.

Toledo.—Population, 10,922; situated 39 miles from Cebú.

Tuburan.—Population, 10,760; situated 511 miles from Cebú.

DISTRICT OF CONCEPCIÓN.

Situated on the island of Panay, it is bounded on the north by the Sea of Masbate, on the south by Iloilo, on the east by the Sea of Negros Island, and on the west by Capiz. The area is 683 square miles and the population 19,342.

The capital is **Concepción,** with a population of 5,736. It is situated 104 miles from Iloilo and has a post office and telegraph station.

CITIES AND TOWNS.

Ajuy.—Population, 1,000; situated 6 miles from Concepción.

Carles.—Population, 10,300.

Lemery.—Population, 3,677; situated 30 miles from Concepción.

ISLAND AND PROVINCE OF LEYTE.

The island of Leyte is bounded on the north by the canal separating it from Samar, on the east by the Pacific Ocean, on the west by the sea separating it from Bohol and Cebú, and on the south by the one separating it from Mindanao. It is extensive and irregular, having an area of 3,087 square miles and a population of 270,491. A high and abrupt mountain chain crosses the island nearly parallel to the west coast; the coasts are high, but with good natural harbors. In the northern part and on the western slopes of the great sierras, streams of potable water and also many lagoons abound. This is different from the eastern part, where the latter are scarce. The principal product of the island is abacá, but rice is also raised and cocoanut oil is extracted. There are unworked mines of gold, magnetite, and sulphur.

The capital is **Tacloban,** with a population of 5,226. It is situated 338 miles from Manila.

ITINERARY OF COAST OF LEYTE—WEST COAST.

The west coast of Leyte is in general safe and steep-to. The fringing reefs do not extend more than a mile from the

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shore. A chain of high mountains runs parallel to the coast, at a distance of 4 to 5 miles inland. The highest peak of the range appears to be Mount Sacripante (3,911 feet), in the southwestern part of the island.

Gigantangan Island, off the northwest point of Leyte, is 2 miles long, NNE. and SSW., and 1 mile wide, and is clean on all sides except the south point, where there is a small reef. The channel that separates it from Leyte is 1 mile wide and 11 to 16 fathoms deep.

Tabin Chico and Tabin Grande are two small bays separated by a tongue of land. Their depth is 7 to 11 fathoms. Tabango and Kampopo bays, separated by Point Liglio, are larger than the Tabines, and appear to be deeper. The narrow reef that fringes this part of the coast follows the contour of these four bays.

Port Palompon is formed by a narrow channel between the coast south of Point Kanaguayan and the reef on which is situated the island Tabok. The only entrance is to the northward, between the point and the island, the southern end of the channel being closed by low reefs covered by mangroves.

Point Kanaguayan is bordered by a reef to the distance of 1½ cables, and the reef of Tapok Island extends 1½ miles WNW., reducing between them the width of the passage to 2 cables, with a depth of 19 fathoms. Proceeding inwards, the passage becomes narrower and shoals gradually, so that in front of the church, where is the best anchorage, it is hardly a cable wide, with a depth of 7 fathoms. Anchorage can also be had close to the sandy point, alongside which vessels of any size can lie secured to the shore. From this point the depth diminishes gradually to the southward, and off Gumalak Island is only 2¾ fathoms. The reefs show at low water, and the edges are marked by poles with bushes on them; but these must not be relied on.

The town of Palompon is on the shore of the port. Supplies of beef and vegetables may be obtained; also fresh water. In the town of Palompon, as in other towns of the Philippine Islands, a tariff of prices is hung up in the Casa Real for the guidance of strangers, who can claim to be supplied for ten days at the prices quoted.

Directions.—To make the port of Palompon the island Kalangaman should be brought to bear N. 64° W., when a course S. 64° E. will lead for the entrance.

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Coast.—The reef that surrounds Tabok and Gumalak islands and fringes the shore to a distance of 1½ miles, continues to the southward, round Point Duljugan, where it is ½ mile wide, to Port Dupon, which lies 2 miles to the eastward of the point. Point Duljugan is low and thinly wooded; the southwestern point of Port Dupon is somewhat higher and has a little fort on it.

Port Dupon has a depth of 38 fathoms in the center; the best anchorage is on the western side of the port, where the shore is less steep than on the east side and there is more shelter; on the east side of the port the bottom consists of coral, and anchorage is considered very unsafe.

The little bay of Siapon, 1½ miles to the eastward, is sheltered from all winds but those from south to southeast; the depth at the entrance is 15 fathoms, lessening gradually inwards. The low point between the two bays can be distinguished by a patch of cogonal on it. Water can be obtained in both bays.

Kalunangan Point is low, flat, and bordered by a narrow reef. Anchorage can be had on the coast between Point Kalunangan and Point Biason in 9 fathoms, coarse sand.

Okmok Bay.—To the eastward of Point Kalunangan the coast forms the great bay of Okmok, in the northwest part of which is Port Bello, with anchorage in 2¾ to 9 fathoms, mud. This is the only safe anchorage on the south coast of Leyte Island during the generality of typhoons.

Jaloban River is a good-sized river with 5 feet water on the bar at low water and deeper water within. From the eastern bank of the river a clean, sandy beach, with good depth off it, stretches 1½ miles to the SE. as far as the town of Okmok.

Okmok is situated near the shore and on the slope of Mount Aslum; it is surrounded by a breastwork of stone with three ruined forts.

Mount Aslum rises to a high and remarkable peak, NE. by E. 4½ miles from Okmok town. Kampukan peak, 2 miles NE. of Aslum peak, is much higher and more conical than that of Aslum. Both mountains abound in sulphur and copperas.

Coast.—From Okmok to Baybay, a town lying about 23 miles to the southeastward of Okmok, the shore is low and consists of steep sand beach with generally soundings of 14 to 18 fathoms very close to it. From Baybay to Ilongos, 19 miles to the southward, the coast forms rocky headlands alternately with small, clean, and steep bays.

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KAMOTES ISLANDS.—This group consists of three islands connected by a reef, and one small detached islet, Tulang. The westernmost island, Pasijan, is 8½ miles long, north and south, and nearly 5 miles wide, and is clean and steep-to all round except that part of the eastern side where a reef that nearly dries at low water joins it to Poro Island. Tulang Island, off the northwest part, appears clean and steep.

Poro Island is surrounded on all sides except the northwestern by a reef of less than ½ mile in width; the channel between Poro and Poson has a depth of 5 to 7 fathoms, and is practicable for navigation. The town of Poro is on the south side of the island, and anchorage may be had off the town at the distance of ½ mile; but caution must be observed in approaching, as shallows that dry at low water run out a long distance.

Poson, the northernmost of the group, lies 5½ miles SSE. of Point Kalunangan; the channel between is clear and deep, but care must be taken not to approach the shore off Poson, as a reef extends to the northward of it about 1 mile.

Tides.—The flood stream from the northward passes from west to east in the channel between Poson Island and Kalunangan Point and curves round the island to the southward. The flood stream from the southward, which has entered by Surigao Strait, meets the flood stream from the northward about 5 miles south of Kamotes.

Cuatro Islas (four islands) is the name given to a group of four islets lying 3 miles off the coast of Leyte; the southernmost of them, Jimukitan, bears WNW. about 4 miles from a little steep hill with a flat crown on the coast 6 miles north of Ilongos; this islet and the one 3 miles NW. of it (Majabas) are clear and steep-to; the two others are surrounded by reefs. The passages between these islets and between them and the coast are safe.

Coast.—From Ilongos the coast forms an elbow which measures 2½ miles across the town of Bato and then continues to the southward for 11½ miles to the Point Green Hill, opposite Lapinin Isle, near Bohol.

Shoal.—Off the village of Makalon, 2½ miles south of Bato, is a shoal, having over it from 2½ to 5 fathoms; it is generally marked by bushes.

From Green Hill the coast trends eastward for nearly 6 miles, to the town of Masin, and then turns SE. ½ E. for 13

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miles to Point Tuankan (or Ninipo), the south extremity of the island of Leyte. All this part of the coast is formed of rocky points and small sand beaches, and is clean and steep-to, except before the town of Masin, and also around Point Tuankan.

Masin is a town situated on a sand beach from which a ledge projects some 2 or 3 cables and dries at low water; a channel of 2¾ fathoms leads to the town. There is anchorage on a bank of small extent in 7 to 14 fathoms, sand, with the church bearing NW.

Point Tuankan is low, and is formed of rock underworn by currents, giving it the appearance of a rampart. It is surrounded by a narrow steep reef with 4½ to 9 fathoms at the edges and no bottom, with 92 fathoms line at 1 cable distance.

Limasana Island, situated 2 miles to the SE. of the southern point of Leyte, is 4½ miles north and south and 1 wide, and has a remarkable hill on its northern part. The island is clean, and on its southeast part there is a sandy beach, where anchorage can be had in 2¾ fathoms at 1 cable from the shore. The channel between Limasana Island and Point Tuankan is safe.

Tides.—The tidal streams run with great force here, the flood stream to the NW. and the ebb to the SE.

Panaon Island, separated from the southeast point of Leyte by a narrow channel, is 17½ miles long, NNW. and SSE., and 5 miles wide at its northern part. The island is mountainous and is divided throughout its length by a range of hills terminating to the south in a mountain 2,313 feet high, the slope of which forms the southern point of the island.

The eastern coast is high and rugged, and shows several cascades of excellent water. The western coast, though steep, presents several sand beaches, where anchorage may be had in 7 to 9 fathoms, sand, but it is better to anchor in the sheltered port of Liloan.

Port Liloan has two entrances. The eastern entrance is very narrow; the least depth in it is 2¾ fathoms, increasing to 4½ and 5½ fathoms in Panaon Strait. The water in it is so clear that the bottom can be seen readily. In order to enter the port from the eastward, steer for the narrow opening between Leyte and Panaon Island, which runs S. 73° W.; while a good distance off a group of cocoanut palms on Point Liloan

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will be seen; the soundings increase on approaching the entrance; when 15 fathoms is obtained take the middle of the channel which leads to the anchorage coasting the reef that ranges along the shore of the port until in front of the town, then anchor in 5½ to 7 fathoms, sand.

To enter by the western passage, the best mark to steer for is a little hill near Point Liloan, with cocoanut palms and some houses on it, taking care to clear a little reef NW. of the entrance point, near which the depth is 26 fathoms, and closing as much as possible the sandy point of Panaon, and avoiding the coast of Leyte, from which a reef projects 3½ miles to the SW. Between the southern edge of this reef and the sandy point of Liloan, which form the western entrance of the port, and which is 3½ cables wide, the depth is 7 to 9 fathoms, shells.

The shores of the port are sandy, and the town of Liloan is situated on a little plain.

SURIGAO STRAIT.—Surigao Strait is famous for having been traversed by Magellan when he crossed the Pacific Ocean and discovered the Philippine Islands. The strait is now less frequented than that of San Bernardino, which is more to windward in the northeast monsoon. It is, however, more direct and safer than that strait, but it obliges vessels that take it, if they are making for Manila, to work up the west coast of Negros and Panay and the east coast of Mindoro. It is of advantage to vessels going to the southern Philippines or to the Sulu Sea.

The main strait is safe and deep throughout its length, and the shores of the islands that border it are steep-to. Steamers from the Cebú Sea making for ports on the east coast of Mindanao may find it advantageous to take the eastern passage between Dinagat and Bukas islands and the main coast of Mindanao. This channel will be described after the main strait.

SOUTHEAST COAST.

From Panaon Strait the coast trends north for 5½ miles, then turns abruptly to the west for another 5½ miles to Maragusa Point, a rounded headland formed by the western slope of Mount Kabalian, which is 3,130 feet high; the coast line then continues north again for 8½ miles, to Ginungagan Bay. Throughout this entire length the coast is high and clean,

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with deep water in the vicinity, but it is exposed to the open sea.

Hinondayan Bay is very small; an islet surrounded by rocks lies at the mouth; the depth of water in the passages on either side of the islet is 11 fathoms, and within it is 3½ fathoms.

Ginungagan Bay has a depth of 15 fathoms in the middle and 5½ off the town of the same name, which stands on the left bank of the River Malaga at the head of the bay. The two islands Kabugan lie in the northern part of the bay, separated from the main coast, which is sandy, by a channel 1 mile wide and 15 to 25 fathoms deep.

Jinatungan Point lies 11 miles north of Ginungagan Bay, and is bordered by a reef which extends ½ mile out. A rocky islet and several rocks lie immediately south of the point at ¾ of a mile's distance from the shore.

Tai Tai Point, 10 miles NW. of Jinatungan Point, is also surrounded by a reef to a distance of ½ mile. From the point the coast trends north for 30 miles to the southern entrance of San Juanico Strait. All this tract of coast consists of sandy beaches with a good depth of water off them; there are many rivers, and several towns stand along the shore. The country inland is level and covered with dense wood, interrupted by cocoanut plantations and rice fields.

NORTH COAST.

The north coast of Leyte is imperfectly known; Carigara must be a place of some trade, for steamers from Manila touch there about once a fortnight, but there is no information about it to hand.

CITIES AND TOWNS.

Abuyog.—Population, 9,112; situated 40 miles from Tacloban.

Alang-Alang.—Population, 8,602; situated 18 miles from Tacloban.

Albuera.—Population, 4,555; situated 18 miles from Tacloban.

Almeria.—Population, 3,216; situated 63 miles from Tacloban.

Babatugon.—Population, 2,213.

Baliran.—Population, 6,201.

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Baru.—Population, 12,322; situated 31 miles from Tacloban.

Bato.—Population, 3,651.

Baybay.—Population, 17,367; situated 87 miles from Tacloban.

Borauen.—Population, 21,290; situated 26 miles from Tacloban.

Cabalian.—Population, 4,785; situated 130 miles from Tacloban.

Caibiran.—Population, 4,153; situated 260 miles from Tacloban.

Cajaganaan.—Population, 260.

Capoocan.—Population, 1,622; situated 33 miles from Tacloban.

Carigara.—Population, 13,732; situated 32 miles from Tacloban.

Dagami.—Population, 25,000; situated 20 miles from Tacloban.

Dulag.—Population, 10,113; situated 22 miles from Tacloban.

Hilongos.—Population, 13,813; situated 96 miles from Tacloban.

Hindang.—Population, 5,314; situated 9 miles from Tacloban.

Hinunangan.—Population, 7,899; situated 62 miles from Tacloban.

Hinundayan.—Population, 3,896; situated 79 miles from Tacloban.

Inopacan.—Population, 4,239. It is situated 92 miles from Tacloban and has public highroads.

Jaro.—Population, 12,475; situated 22 miles from Tacloban.

Leyte.—Population, 6,719.

Liloan.—Population, 3,982.

Maasin.—Population, 18,499, the township having 144,208; situated 156 miles from Tacloban.

Mac-Crohon.—Population, 5,780.

Malibago.—Population, 1,119; situated 5 miles from Tacloban.

Malitbog.—Population, 7,906.

Maripipi.—Population, 1,998; situated 1 mile from Leyte.

Matalon.—Population, 6,146.

Merida.—Population, 897.

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Naval.—Population, 3,183; situated 59 miles from Tacloban.

Ormoc.—Population, 8,107.

Palo.—Population, 17,736; situated 6 miles from Tacloban. It has highroads to neighboring towns.

Palompon.—Population, 7,858; situated 115 miles from Tacloban.

Quiot.—Population, 2,422; situated 137 miles from Tacloban.

San Isidro de Campo.—Population, 3,352; situated 56 miles from Tacloban.

San Miguel.—Population, 4,126.

Sogod.—Population, 4,722; situated 52 miles from Tacloban.

Tanauan.—Population, 18,509; situated 10 miles from Tacloban.

Tolosa.—Population, 5,587; situated 14 miles from Tacloban.

Villaba.—Population, 3,257; situated 97 miles from Tacloban.

ISLAND OF NEGROS.

This island is mountainous and wild; its coasts are difficult of access, and the breakers strong, except on the west coast from Point Bulucabo on the north to Palompon on the west, where it is marshy. A high mountain chain crosses it from Point Doong on the north to the harbor and point of Bombonon on the south; from the last third extend several ramifications of high mountains, terminating at the coast on the extreme south and in the Sierra Dumaguete. Its streams are not important, being short and of little volume. The ground is uneven but fertile. The natives irrigate their estates, and produce tobacco, coffee, sugar cane, and wheat. Manufactures consist in fabrics of abacá and canonegro, of which boat cables are made. The interior of the island, covered with thick forests, is almost unexplored, being inhabited by a few savages. There are in the island 49 pueblos, 41 barrios, and 40 rancherías of subdued infieles.

ITINERARY OF COAST OF NEGROS—NORTH AND NORTHWEST COASTS.

Point Sagai, or Carey (Bito on English chart), the northeast extremity of the island, is of no great height, rocky and

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surrounded by a shoal of ½ mile extent, which dries in places at low water. The space between this point and the Dun islets has not yet been surveyed.

Bokabok Island, 2¾ miles NE. of Point Bito, is of ½ mile extent, and stands, along with several islets and rocks at the west of it, on a shoal which extends 4 miles NW. and SE. and 2½ miles NE. and SW.

Coast.—From Point Bito or Sagai to the north point of the island 15½ miles W. by N., the shore is foul and rocky, with soundings of 3½ to 5 fathoms at a distance of 1½ miles from it. Three sandy shoals, which uncover at low water, lie NNE. ½ E. of Point Guimugahan; the southernmost being 3½ miles, and the northern one 10 miles from the point. The north point of the island is an extensive, rounded, sandy cape, on which is a vantay; it is surrounded by a shoal extending 4′ to the northward, including Ilakaon Islet.

From the north point to Point Tomonton 15 miles WSW., the shore is a long sandy beach, with a depth of 3 fathoms at about a mile from it. From Point Tomonton, a shoal extends 2½ miles to the NW., and has 1½ fathoms at its end. Vessels navigating Iloilo Strait must give this point a berth of 3 miles.

From Point Tomonton to Pandan, 24 miles S. 20° W., the coast is low, and bordered by a long sand beach, with soundings of 5½ fathoms at ½ a mile from it. Point Pandan, which, with Guimarás Island forms the narrow straits of Guimarás, has rocks on its northwest side, projecting to ½ mile, with 7 fathoms near them.

Point Pandan to Sojoton.—From Point Pandan the coast continues low for 28 miles to the southward as far as the town of Suai, near the river Jimamailan; the 1½-fathom shoal which borders Point Pandan grows out between that point and Makikili, to 4 miles from the land, almost joining the bank SE. of Ilampulugan, but to the southward of the latter point it closes the coast and a depth of 3½ fathoms is generally found at 1 mile from the coast.

River Jimamailan.—Of the several small rivers that enter the sea on this coast, this river, near the town of the same name in the angle that the coast makes to the westward, is the most important. The entrance is indicated by stakes, placed by the natives in 1½ to 2 fathoms depth; within the river the best anchorage is near a copse on the left bank,

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where the water is deepest. Near Suai the coast curves to the westward and increases in height; about Point Sojoton it is high.

Shoal.—A patch of 5½ fathoms lies 1¾ miles north of the town and hill of Tantanaian, with 50 fathoms at the distance of 1¾ miles north of it.

WEST COAST.

Point Sojoton is surrounded by reefs to the distance of ½ mile, with 7 fathoms at the edge and 27 fathoms at 1¾ miles to the west of the point. Makiliguian Point, a wooded bluff, is also surrounded by rocks. Linaon Bay, between these two points, affords anchorage in case of necessity in 7 to 9 fathoms, fine sand.

Shoals.—A small rocky shoal, with 3½ fathoms on its outer edge, lies SSW. ½ mile from Point Makiliguian; and another, with 8 fathoms on its outer edge, lies 1½ miles from the point, on the same bearing.

Danjugan Island, 2 miles north of Point Binigsian, is 1 mile long, north and south, and is surrounded by a narrow, steep reef; between it and the coast is another little islet, the channel between which and the coast has a depth of 8 fathoms.

Half a mile southwest of Point Binigsian are Anajaugan Island and four other little islets close to it. South of the point there is anchorage in 9 to 17 fathoms, where good water may be obtained; still farther south are the bays of Cartagena and Sipalai.

Point Matatindok is steep with a flat crown, and is surrounded by rocks, one of which has the appearance of a vessel under sail.

Campomanes Bay, south of Point Matatindok, is clear, and of great depth, with very steep shores, there being 17 to 28 fathoms almost touching the shore. Nabulao Bay, south of Campomanes, is obstructed by an islet, and by a reef which extends from both sides; before it is a shoal, surrounded by deep water, situated ¾ of a mile south of the point between the two bays.

SOUTHWEST AND SOUTHEAST COASTS.

From Campomanes Bay to Point Kauitan the shore is rocky; but it is safe and steep-to, soundings showing no bottom with 37 fathoms at ½ cable distance in many places. From Point

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Kauitan to Point Siaton, the south point of Negros, it is also safe and steep-to, and presents several beaches including the mouths of small unimportant rivers. During the northeast monsoon vessels can anchor off the town of Tolon, but boats only can enter the river at high water.

From Point Siaton to Point Dumaguete the shore is sandy and clear, with soundings of 2¾ to 6 fathoms at 1 cable from it, falling then abruptly to 32 fathoms.

Port Bombonon, 1 mile NW. of the point of the same name, is 2 miles wide and 5½ fathoms deep, and completely sheltered; but the entrance is reduced to a width of 75 yards and a depth of 2¾ fathoms by a ridge of rocks extending from the south shore.

Port Siit is small but clear, with good holding ground, and sheltered; the depth within is from 3¾ to 8 fathoms, and there is a rivulet with good water.

Point Zamboanguita is flat and sandy; a shoal of 2 fathoms extends 2 cables from it. South of the point there is good anchorage in 7 fathoms. The town of Zamboanguita is a mile inland of the point.

Point Dauin is sandy and flat, with trees on it rather higher than those that grow on the other point of the coast; it can be passed close-to, as it is clear and steep, as is also the entire coast between points Zamboanguita and Dumaguete, being sandy, clear, and steep, with 12 fathoms at a short distance.

Apo Island is 300 feet high, visible 24 miles; it is clear and steep-to, except on its western side, which is rocky; it is 1 mile long, north and south, and of medium height.

Current.—In the channel between Apo and the coast of Negros, the current passes constantly from north to south with variable velocity.

Point Dumaguete is a flat, salient point of sand, to the north of which is the town of Dumaguete, the largest in the province, of 13,584 inhabitants, chiefly engaged in collecting turtle shell. Anchorage can be had off the town in 7 fathoms but it is bad, as vessels are liable to drag off into deep water.

Tañon Strait, between Negros and Cebú, is 90 miles long and 14 miles wide at the northern part, and 3 miles wide at the southern entrance. The shores are steep and little frequented.

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EAST COAST.

From Point Bito the coast trends SE. for 7 miles to Point Mokabok, and is bordered by a reef, which extends more than a mile from it.

Bagunbanua Islet is situated on the southwest part of a reef, which extends 2½ miles NW. and SE., with a detached rocky patch to the north; the channel between the islet and the coast reef is 4½ fathoms deep, and is only fit for small coasters.

Danao River.—Between points Mokabok and Okre, which are both of yellow clay and steep, is the mouth of the great river Danao, with a depth of 2¾ fathoms on the bar at low water, and 5½ fathoms up the stream.

Point Tiklin, 19 miles SW. by S. of Point Okre, is flat and covered by mangroves. The Spanish chart shows an islet on its northeast part, with a shoal projecting ¾ of a mile to the eastward. On the northern and western sides of an islet, in a bay 1½ miles north of Point Tiklin, there is anchorage in 4½ fathoms; there is no passage between this islet and the point to the southward.

Point Tabon, 3 miles south of Point Tiklin, is low and sandy; the sandy beach between the two points must not be approached closely, as the water is shoal.

Refugio Island is about 1½ miles long, north and south, and 1 mile wide; the north part is high; off the south part is a little shoal. The channel between Refugio Island and the coast is about a mile wide, and affords good anchorage in 12 fathoms, mud. The channel can be entered from either end, but a wide berth must be given to the shoal off Point Tiklin and the western point of Refugio.

Tides.—North of Refugio the flood stream sets to the SW. and the ebb to the NW.; but south of Refugio they set in the opposite direction.

Coal.—Layers of coal have recently (1879) been discovered in this part of Negros, and outcrops of coal have been found in the rivers which enter the sea near the towns of Calatrava and Talabe.

Coast.—From Point Tabon to Point Panay the coast is steep, clear, and covered by mangroves. Point Jilaitan is steep-to. Point Panay is flat and sandy, with rocks on its northern side; there is anchorage in 3 fathoms to the southward of it before the little town and river Guijolgan.

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Between Guijolgan and Kateal a shoal extends to a short distance.

Point San José is low, very steep, and surrounded by bowlders; from this point to the Bais Islands the coast is steep and clear.

Bais Islands are two high islands surrounded by sand banks, which extend 2 miles to the northeast, and appear almost to fill the bight of the coast in which they are situated, between points Teka and Kanamai; both these points are foul.

Point Amblan is flat, steep, and clear; not far from it is the town of Amblan, of 5,500 inhabitants, engaged in the cultivation of cacao. There is anchorage before the town in 4 to 13 fathoms, sand.

The southern entrance of the strait of Tañon is very narrow; the shores are steep, and the tidal streams at spring reach a velocity of 5 to 6 knots, with strong races and eddies; at neaps the velocity is 2 to 3 knots. A fuller account of these tide streams will be given after the description of the eastern side of the strait.

PROVINCE OF WESTERN NEGROS.

Situated on Negros Island, it is bounded on the north by the Visayas Sea, on the west by the Paragua Sea, and on the south and east by the Province of Eastern Negros. The area is 1,929 square miles, and the population 226,995.

The capital is **Bacolod,** with a population of 6,268. It is the residence of the politico-military governor, the secretary, judge, attorney general, and several public functionaries.

It is situated 379 miles from Manila.

CITIES AND TOWNS.

Arguelles.—Population, 2,390.

Bago.—Population, 7,092; situated 16 miles from Bacolod.

Binalbalgan.—Population, 5,135; situated 16 miles from Bacolod.

Cabangcalan.—Population, 7,636; situated 54 miles from Bacolod.

Cadiz Nuevo.—Population, 7,046; situated 34 miles from Bacolod.

Calatrava.—Population, 2,720; situated 75 miles from Bacolod. The barrios of San Carlos, San Isidoro, and Guadalupe increase the population to 4,702.

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Carlota (La).—Population, 12,384; situated 29 miles from Bacolod.

Cauayan.—Population, 4,644.

Dancalan.—Population, 1,445; situated 41 miles from Bacolod.

Escalante.—Population, 3,000; situated 1 mile from Bacolod.

Granada.—Population, 2,864; situated 8 miles from Bacolod.

Ilog.—Population, 6,070.

Isabela.—Population, 11,104.

Isiu.—Population, 1,596.

Jimamaylan.—Population, 6,758; situated 50 miles from Bacolod.

Jinigaran.—Population, 13,620; situated 28 miles from Bacolod.

Minuluan.—Population, 11,338; situated 5 miles from Bacolod.

Murcia.—Population, 8,000; situated 8 miles from Bacolod.

Pontevedra.—Population, 12,000.

San Enrique.—Population, 3,607.

Saravia.—Population, 15,304; situated 8 miles from Bacolod.

Silay.—Population, 14,537; situated 8 miles from Bacolod.

Suay.—Population, 2,972; situated 41 miles from Bacolod.

Sumag.—Population, 4,332.

Valladolid.—Population, 14,000; situated 15 miles from Bacolod.

PROVINCE OF EASTERN NEGROS.

It is bounded on the north and west by Western Negros, on the south by Mindanao, and on the east by Cebú and Bohol. The population is 94,782.

The capital is **Dumaguete,** with a population of 13,584, the township having 13,613. It is situated 130 miles from Bacolod.

CITIES AND TOWNS.

Amblan.—Population, 5,500; situated 13 miles from Dumaguete.

Ayungon.—Population, 1,107.

Ayuquitan.—Population, 3,171; situated 9 miles from Dumaguete.

Bacon.—Population, 8,376.

Bais.—Population, 9,304; situated 27 miles from Dumaguete.

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Dauin.—Population, 8,000; situated 8 miles from Dumaguete. There are roads leading to neighboring towns.

Guijulungan.—Population, 7,006; situated 73 miles from Dumaguete.

Jimalaud.—Population, 5,559; situated 59 miles from Dumaguete.

Manjuyod.—Population, 7,486; situated 35 miles from Dumaguete.

Nuestra Señora de la Victoria.—Population, 2,030.

Nueva Valencia.—Population, 6,316.

Siaton.—Population, 8,142; situated 203 miles from Dumaguete.

Sibulan.—Population, 6,346; situated 4 miles from Dumaguete.

Tanjay.—Population, 12,408; situated 19 miles from Dumaguete.

Tayasan.—Population, 1,569; situated 55 miles from Dumaguete.

Tolon.—Population, 1,514.

Zamboanguita.—Population, 5,603; situated 16 miles from Dumaguete.

PROVINCE OF ROMBLON.

This province consists of the following six islands: Romblon (the principal one), Tablas, Sibuyan, Banton, Simara, and Maestre Campo. It is bounded on the north by the Tayabas Sea, on the south by the Visayas Sea, on the east by the Sea of Masbate, and on the west by the Sea of Mindoro. The area is 813 square miles and the population 38,633, distributed among 13 barrios and 3 rancherías of infieles.

The capital is **Romblon,** with a population of 6,764. It is situated on the harbor of the same name at the north of the island, 204 miles from Manila. It is the residence of the politico-military commander.

CITIES AND TOWNS.

Azagra.—Population, 3,980; situated 19 miles from Romblon.

Badajoz.—Population, 3,234; situated 9 miles from Romblon.

Banton.—Population, 3,449; situated 151 miles from Romblon.

Cagidiocan.—Population, 3,636.

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Corcuera.—Population, 1,995; situated 4 miles from Romblon.

Looc.—Population, 4,500; situated 38 miles from Romblon.

Magallanes.—Population, 1,055.

Odiongan.—Population, 5,924; situated 34 miles from Romblon.

ISLAND AND PROVINCE OF SAMAR.

Situated to the southeast of Luzon, it is bounded on the north by the Strait of San Bernardino, on the south by the Jahanetes Canal, separating it from Leyte Island, on the east by the Pacific Ocean, and on the west by the Visayas Sea. It is very mountainous, with high, steep coasts. A number of sierras and mountains extend in various directions, forming valleys and glens fertilized by numerous rivers, which, however, have little current and volume. The length of the island is 155 miles. The chief products are abacá, rice, and cocoanuts, oil being extracted from the latter. Among the medicinal plants the most highly valued is the catbalonga seed. Commerce is quite active in spite of the few means of communication and the dangerous coasts. The island is visited yearly by tornadoes which devastate crops and cause much damage to agriculture. The high mountains and thick forests of the interior are inhabited by a great number of savages who have sought refuge here. The area is 4,699 square miles and the population 200,753, distributed among 43 pueblos, 208 visitas, and 3 rancherías of subdued infieles.

The capital is **Catbalogan,** with a population of 6,459. It is situated on the harbor and bay of like name on the west of the island and opposite Buad, and at a distance of 338 miles from Manila. It is the residence of the politico-military governor.

ITINERARY OF COAST OF SAMAR—EAST COAST.

The east coast of Samar has not been sufficiently explored to afford an exact description. It is, however, known that the coast is irregular and hilly, bordered by little islets and rocks, and fringed by a narrow reef which is clean and steep-to; that there is no good port on the coast, and that the several bays which open along it offer neither good anchorage nor shelter from the winds and seas of the Pacific Ocean.

Cape Espiritu Santo, the northeastern extremity of Samar, lies 11 miles ESE. of Palapa Port, and is formed of high land

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scarped and steep, visible in clear weather at a distance of 40 miles, serving as an excellent mark for working the Strait of San Bernardino.

The mountain Mesa de Palapa, which rises 10 miles SW. of Cape Espiritu Santo, is always visible to a distance of 42 miles.

Borongan, in latitude 11° 41′ N., is the only place on the coast where supplies can be obtained. The town stands at the bottom of a little bay about a mile wide and 6 cables deep, with a sandy beach at the head of it. The river Burumhan discharges itself into this bay, the entrance to which is between the islands Ando and Divinubo, both moderately high. The depth of water is 37 fathoms between these islands, 26 between them and the bay, and 5½ fathoms very close to the shore of the bay. Ando Island is united by a reef to Anitaguipan Point on the main coast to the northward; and there are islets and reefs between Divinubo Island and the point of the coast south of Borongan. A small steep rocky shoal lies in the middle of the bay, with the south point of Ando Island bearing N. 70° E.

Anchorage.—During the northeast monsoon the best anchorage is about 4 cables SW. of the middle of Ando Island; during the southwest monsoon there is good anchorage in the Bay of Borongan, and also in another bay immediately to the south, in 9 fathoms at 6 cables from the shore.

The Suribao, or Saru River, enters the sea about 2½ miles south of Borongan, with a wide estuary closed by a narrow bar. This river takes its rise to the SW., not far from the source of the Vasey River, which flows into San Pedro Bay.

The coast.—From Borongan to the southward the coast is less elevated than it is to the northward. There are extensive cocoanut plantations between Borongan and Lanang, chiefly utilized for the production of cocoanut oil. An extensive, but little known bay opens between the north part of the Peninsula of Guiuan and Nagos Point. In the entrance of this bay and to the northward of it there are several islets united together by a reef. The Peninsula of Guiuan is fringed by a reef which extends at farthest to 1 mile from the shore. Near the edge of the reef several sulphur springs gush forth, which are covered at high water, but are nevertheless not brackish.

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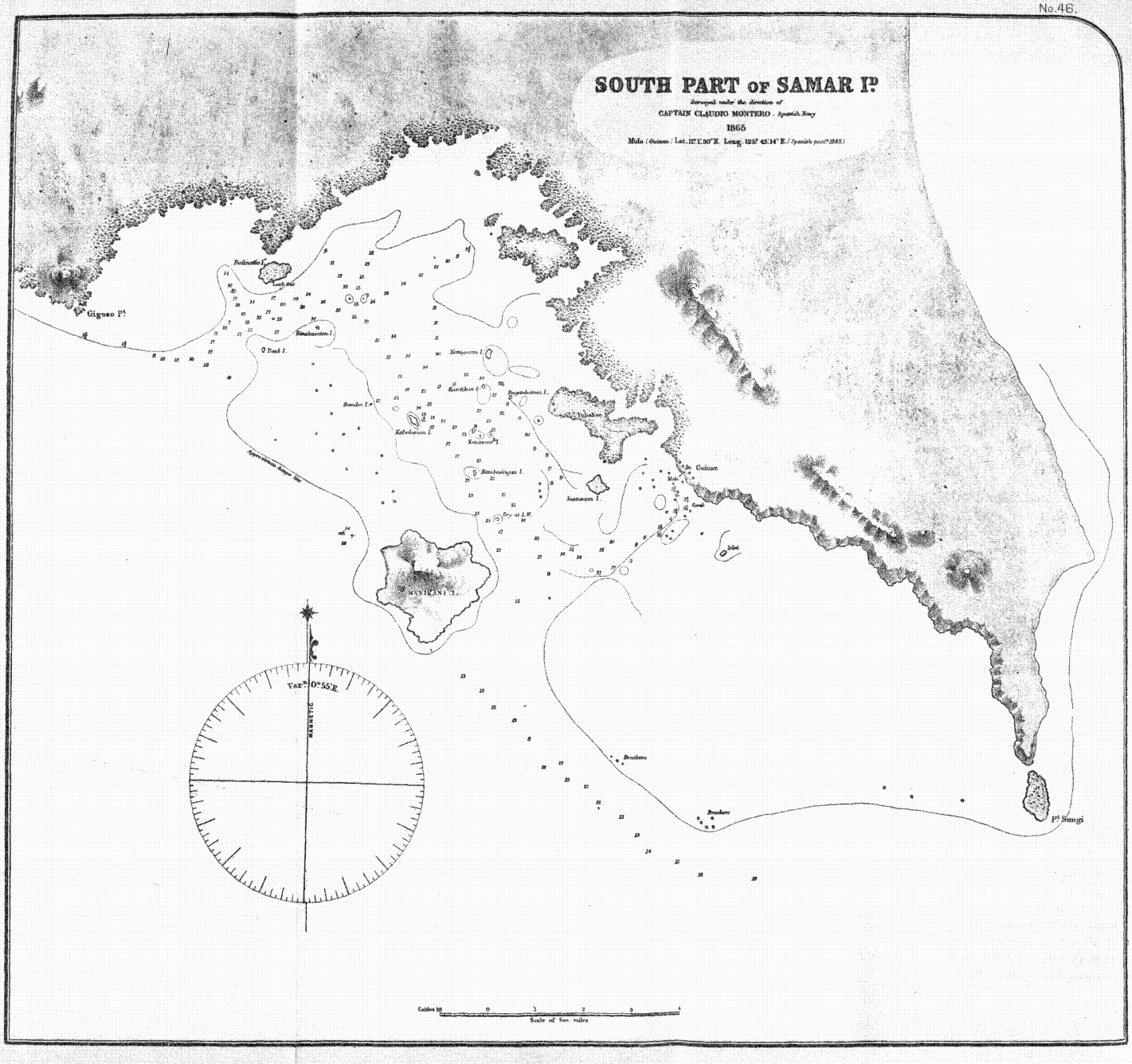

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SOUTH COAST.

South coast of Samar (ch. 46, p. 277) is formed by a tongue of land of moderate height, terminated by a little island. The town of Guiuan stands on the western shore 10½ miles from the south point. The land between this point and the town is higher than the rest, and is fronted by a wide reef extending 7 miles to the west of the point and 6 miles SW. of the town.

Between the town of Guiuan and Point Gigoso, which lies 13 miles WNW. and has a little hill on it, there is a bay of irregular outline and full of danger; the shores are completely hidden by mangroves and fronted by a reef, an opening in which, however, leads to anchorage in 3¾ to 6 fathoms opposite the town of Guiuan.

Manikani Island, 4½ miles SW. of Guiuan, is nearly circular, 2½ miles in diameter, with a central hill of moderate height. It is surrounded by a reef which reaches 5 miles to the NW., with a width of 2½ miles, and having on its end the islets Baul and Binabasalan. Between the island and reef of Manikani and the main coast reef, there is a deep channel running 8 miles SE. and NW. This channel is 2 miles wide and 11 to 20 fathoms deep, with several little islets in it. Vessels of all sizes can find anchorage in this channel under the shelter of the islets.

The southern entrance to this channel, between the southeast point of Manikani and the western edge of the reef off the south point of Samar, is 1⅓ miles wide and 15 fathoms deep in the middle. At 7 cables NE. of Manikani there is a rock which dries at low water, and which can be passed on either side; but the best course to follow is to leave this dry rock and the islets Kambasingan and Kabalarian to the west, and Kaninoan Islet to the northward.

The northern entrance, between the islet Balinalto, on the shore of the bay (with a vantay on its southern end), and the islets Baul and Binabasalan on the end of the Manikani Reef, is ¾ of a mile wide and 17 to 20 fathoms deep.

Anchorage may be found in the opening of the reef leading to the town of Guiuan, with the church bearing NE., care being taken to avoid the edges of the reef on both sides, as well as a small shoal patch in mid-channel and a large shoal near the anchorage. The depth of water at the entrance of this opening is 14 fathoms, lessening gradually to 6 and 3¾

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fathoms off a sand beach bordered with rocks in front of the town. There is also anchorage NE. of the islet Kabalarian in 13 fathoms.

The coast.—From Gigoso Point the coast trends westward 16 miles, as far as Capines Point, and forms between these points two clean bays, with deep water in them, separated by Kablagna Point. The villages along this coast offer few resources, and neither wood nor water can be procured.

Shoals.—A rocky shoal is marked on the chart 1 mile south of Kablagna Point. In 1861 H. M. S. *Sphinx* struck on a coral reef having 1 fathom water on it, lying ½ mile from a low point south of Maglobo. From it Capines Point bore N. 87° W., and the west side of Jumantral (Malhon Island) S. 40° E. It is 800 yards in length, NW. and SE., and about 250 yards east and west, and is probably identical with the shoal laid down in the chart, about ½ mile SE. of this position or 1 mile S. of Kablagna Point. The chart of this part of the coast is not very correct. Another rocky shoal, named Kalianan, lies in the entrance of the bay between points Kablagna and Capines.

Capines Point is moderately high and wooded. Alabat Point, at the entrance of San Pedro Bay, lies 2 miles WNW. of Capines.

NORTHWEST COAST.

Port Kanaguaion, on the west coast, opposite the south end of Dalumpiri Island, is a small port in which vessels of all sizes can find shelter in bad weather. It is formed by an inlet in the coast, with two islets fronting it, leaving two narrow channels for entrance. The Great Pass, or Western Channel, is 1½ cables wide.

The anchorage is between the islets and the coast of Samar, and offers good depth of water and good holding ground, but the space is confined. Water can be obtained from a rivulet opposite the first islet.

Coast.—Immediately south of Point Kanuguaion the river Pinalet runs down and enters a little cove, steep-sided, with a depth of 6 fathoms near the shore. Point Pinalet, the southern point of this cove, is high and jagged, and has an islet off it at a distance of 50 yards. From this point the coast trends SSE. for 7 miles to Point Malayo; it is rocky as far as the intermediate point, Maglagaban, and from thence to Point Malayo it is steep-to.

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Mobo River, 4 miles NNW. of Kanaguaion Port, is fed by a beautiful waterfall which flows from a valley between two high hills of black rock; its shores are covered by trees of nipa palm. The river is 100 yards wide at the mouth, but the available width is diminished to 25 yards by a reef from the south point. The waterfall is $\frac{1}{3}$ of a mile from the mouth of the river, and can be reached by a boat. The depth on the bar is 11 feet at low water, but within the bar it increases to 9 fathoms.

In this part of Samar the coasts form the base of a high range of mountains covered with trees of a very dark green. The hill consists of sand and rocks, covered with mangroves down to the water's edge. At $\frac{1}{3}$ of a mile from the shore the depth is 7 fathoms, sand and rock.

Kinabasaran Point is covered with high trees; the shore between the point and Mobo River is bordered with rocks, in some places to a distance of $\frac{1}{4}$ of a mile from the shore. The tidal streams, which run $7\frac{1}{2}$ knots at springs and 4 knots at neaps, strike the point with great force, producing violent eddies.

Lipata Point, $3\frac{1}{2}$ miles north of Kinabasaran, is high and rocky. A reef of sand and rock covered by 5 feet of water projects from the point. There is good anchorage during the northeast monsoon in the open bay of Tinaguitan, between points Kinabasaran and Lipata; the depth of water in the northern part is from 27 to 13 fathoms, and in this same part of the anchorage there is a good stream from which water may be obtained.

Balicuatro Point, the northwest point of Samar, is clean and steep-to to the northward, while to the southward and westward the shore is bordered by rocks to some distance out.

Balicuatro Bay, to the eastward of the point, is deep, and the shore is steep and fringed here and there with rocks. Vessels should not anchor in it except in case of need.

Balicuatro Islands, off the northwest coast of Samar, have not been surveyed, and the channels between them are narrow and little known. A vessel should therefore take great precautions in entering them.

Vari Island, $3\frac{1}{2}$ miles NE. of Point Balicuatro, is 4 miles long and 3 miles wide; its shores are clean and steep-to, except to the south and southeast, where a reef extends $\frac{3}{4}$ of a mile out. A detached rock lies to the north of Vari Island,

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½ mile off. Irregular depths of 7 to 36 fathoms extend to 20 miles west of Vari Island. The bottom is rocky and the tidal stream strong, so that vessels anchoring there are liable to lose their anchors.

Kinamaligan is low and surrounded by a reef; the channel, this island, and the reef off the coast of Samar are ⅓ of a mile wide and 5 to 15 fathoms deep; the soundings increase abruptly to 27 fathoms to the eastward.

Kabaun, the easternmost of the Balicuatro Islands, is low, wooded, and surrounded by a reef which extends to more than a mile from the shore. There is anchorage between it and the coast of Samar, completely sheltered, but, at the same time, surrounded by islets, dangers, and sand banks which make it difficult of access. The channels leading to it are only known to the local pilots.

Katadman Anchorage is fit for coasters only, and for them only during the southwest monsoon, as during the northeast monsoon a very heavy sea sets in. The town of Katadman, on the left bank of the river of the same name, contains a population of 8,200 souls.

The coast of Samar is very foul to the eastward of Katadman. The islets Hirapsan and Palijon, 4 miles from the coast, appear to be united to it by a reef which continues along the coast as far as Point Oot. From Point Livas, 4 miles east of Oot, there are rocky islets covering a distance of ½ mile to the northward.

Laguan Bay, between Livas Point and the western side of Laguan Island, offers good anchorage in 6 or 7 fathoms, sheltered from east and northeast winds, but exposed to the northwest and west. The depth of water diminishes gradually from 7 fathoms at the mouth of the bay to 1 fathom at a little less than a mile from the shore at the head. The southeastern part of the bay is rocky.

Laguan Island is separated from the coast of Samar by a narrow channel which communicates with Port Palapa. The town of Laguan stands on a slight eminence on the southwest shore. A reef stretches out 6 cables from the middle of the western shore of Laguan Island; in order to avoid this danger (when navigating to the northward from Laguan Bay) the islet off the northwest point of Kahayagan Island should not be brought to bear westward of north until the reef is passed.

Kahayagan Island is surrounded by rocks which extend out 7 cables from the northwest part.

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WEST COAST.

The part of the coast between Balicuatro Point, the northeastern extremity of Samar, and Malayo Point, some 21 miles to the southward, has been included in the description of San Bernardino Strait. From point Malayo the coast trends SE. ½ S. for 15 miles to Point Hibatang, west of Kalbayok; this part of the coast is high and clear.

The town of Kalbayok is situated on the shore in a bend of the coast near the mouth of the river Kalbayok. The anchorage is opposite to the town, about a mile from the shore, with the church bearing NE. by N., in 3½ to 4 fathoms water. It is not a good anchorage during the southwest monsoon. Steamers from Manila call here fortnightly.

Coast.—From Kalbayok the coast trends SE. for 25 miles, as far as Catbalogan, and is broken up into bays with little depths of water in them, and quite exposed to the southwest winds. The rivers that flow into these bays can be entered only by small coasters at half tide. Near the coast the water is shallow, in no place exceeding a depth of 4½ fathoms; a few islets and banks that lie off it are separated from it by shallow channels.

The Libukan Islands are a group of three islands and several smaller islets lying about 4½ miles off the coast of Samar. There is good anchorage in a bay on the north side of the largest island, Libukan Dakó, in 12 fathoms water, and vessels on the coast make for this anchorage when the southwest gales, called collas, begin to blow. Two islets named Layalaya, united by a reef which dries at low water, lie 1 mile SE. of the largest island.

Dangers.—A shoal, awash at low water, lies 7 cables SW. of Libukan Gutiai; and Dapdap Shoal, which uncovers at low water, lies 9 cables south of Layalaya Islets. Kambidsos Rocks lie 1¾ miles east of Dapdap Shoal, and 1 mile north of the largest Kanahauan island.

The Kanahauan Islands offer good anchorage among them, sheltered from all winds, in depths of 15 to 20 fathoms. The best anchorage is in the little port of Aguirre, on the east side of Timpasan Island, and near the southwest point of Kanahauan Dakó. The southern entrance to this port is 1 cable wide and from 7 to 12 fathoms deep; the northern entrance is only 2 fathoms deep. The port itself is about 2 cables wide,

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with a depth of 7 to 10 fathoms in the middle, and 2 to 3 fathoms near the shore.

The passages between the islands and banks that compose the group are safe and deep, and afford easy access to these anchorages, which is a fact all the more important in that the neighboring coasts have no harbors. The summit of Kanahauan Dakó is 446 feet high, and that of Timpasan 489 feet; the other islands rise to about 245 feet. They are all covered with large trees, which the natives are now clearing away and replacing by plantations of abacá.

Buri Island, lying 2¾ miles SW. of Catbalogan, is separated from the coast of Samar only by a channel less than 1 fathom deep. There is anchorage on the eastern side of the island at 2 or 3 cables from the shore in 2½ to 5 fathoms, and also on the north side of the island at 3 cables from the shore, with the summit of the island bearing N. 27° W., in 4½ fathoms.

Catbalogan, the capital of the province of Samar, stands on the shore of a little bay at the mouth of the river of the same name. It carries on a fair trade with Manila, chiefly in hemp and cocoanut oil. The bay, which is open to the SW., has a depth ranging from 5 to 2½ fathoms, and is fronted by the shoals Lutao, Kinituai, and others, which lie from 2 miles W. to 1 mile SW. by S. of the church in the town; these shoals dry at low water, and between them and the main coast there is a passage to the southward 4½ fathoms deep.

The mouth of the river is obstructed by a bar, which only allows ingress at high water to vessels of not more than 6 feet draft.

Anchorage.—The best berth and nearest to the mole is 4 fathoms, bottom fine sand, with the house of the governor in line with the church. In bad weather vessels can proceed by the passage between the shoals and the shore to a more secure anchorage under the islands Darajuai and Majaba, which lie 1¾ to 3¼ miles to the southward of the town. Steamers call fortnightly at Catbalogan.

Maqueda Bay, the great indentation south of Catbalogan, is little known; it is shallow and only practicable for coasters. Majaba Island, at the mouth, offers sheltered anchorage on its eastern side in 6 fathoms. A shoal awash, named Kambalat, lies between Majaba and Buat islands; there are 10 fathoms in the channel on either side.

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PARASAN AND BUAT ISLANDS.—Parasan is 10 miles long, north and south, low, and bordered by sand beaches; the western shore is clean, and the rocky islets off it are all high except the one to the northward, which only partly uncovers at low water.

Buat is circular, about 4½ miles across, rising to a peak 1,155 feet high. There is a sheltered port on the southern side, with a depth of 4 fathoms. The channel (called Buat channel) between these islands and the coast of Samar is very narrow, and is used only by small coasters going from Bilaran Island to Catbalogan.

CITIES AND TOWNS.

Balangiga.—Population, 5,000.

Basey.—Population, 13,756.

Bobon.—Population, 4,830.

Borongan.—Population, 9,448.

Calbayog.—Population, 30,250; situated 11½ miles from Catbalogan.

Calviga.—Population, 4,292.

Capul.—Population, 2,295.

Catarman.—Population, 10,482; situated 93 miles from Catbalogan.

Catubig.—Population, 9,565; situated 56 miles from Catbalogan.

Dap-Dap.—Population, 2,634.

Gandara.—Population, 15,563; situated 10 miles from Catbalogan.

Guiuan.—Population, 11,311; situated 109 miles from Catbalogan.

Hernani.—Population, 2,555.

Jiabong.—Population, 3,579.

La Granja.—Population, 3,413; situated 25 miles from Catbalogan.

Lanan.—Population, 4,779.

Laoang.—Population, 8,129.

Lavezares.—Population, 3,480.

Libas (or San Julian).—Population, 3,616.

Mercedes.—Population, 3,068.

Navas (Las).—Population, 2,830.

Oquendo.—Population, 5,200; situated 20 miles from Catbalogan.

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Oras.—Population, 5,667.

Palapag.—Population, 5,802; situated 60 miles from Catbalogan.

Pambujan.—Population, 7,423.

Paranas.—Population, 7,366; situated 8 miles from Catbalogan.

Paric.—Population, 3,469.

Pinabacdao.—Population, 1,975.

Quinapundan.—Population, 2,000; situated 29 miles from Catbalogan.

Salcedo. –Population, 4,470; situated 60 miles from Catbalogan.

San Sebastian.—Population, 839; situated 9 miles from Catbalogan.

Santa Rita.—Population, 4,394; situated 43 miles from Catbalogan.

Sulat.—Population, 4,613.

Taragnan.—Population, 3,950.

Tubig.—Population, 3,378.

Villa Real.—Population, 6,091; situated 50 miles from Catbalogan.

Zumarraga.—Population, 4,561; situated 9 miles from Catbalogan.

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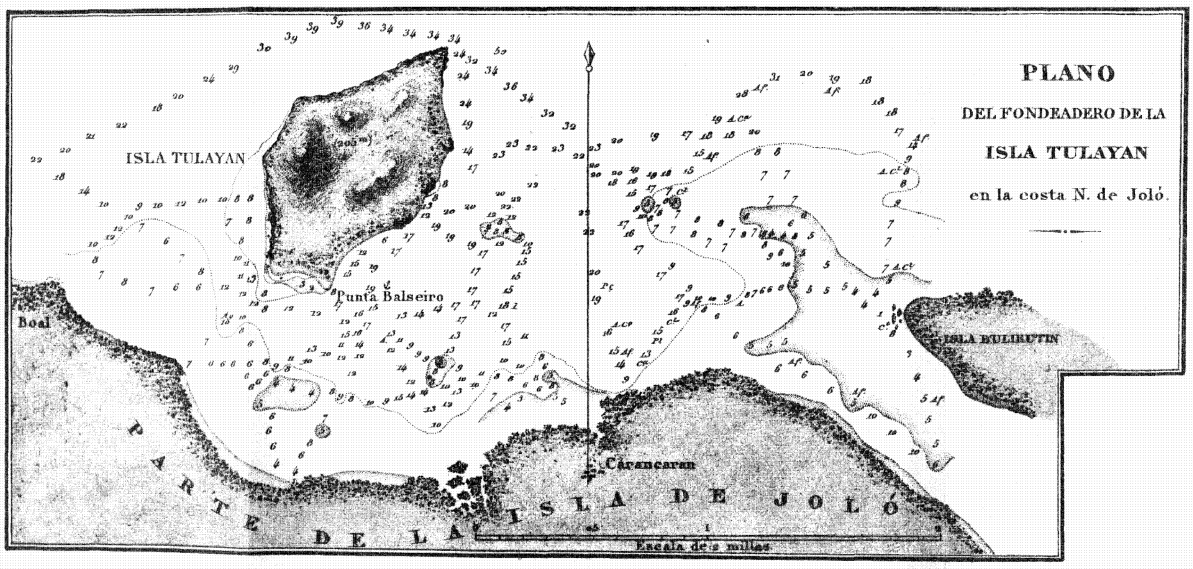
No 47.



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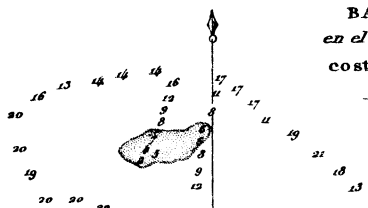
Escala de 3 millas.

0 0.5 1 2 3

BAJO ESEO
en el seno de Suoc
costa N. de Joló.



BAJOS BATO LAQUI
al SO. de Punta Cabalian
costa S. de Joló.

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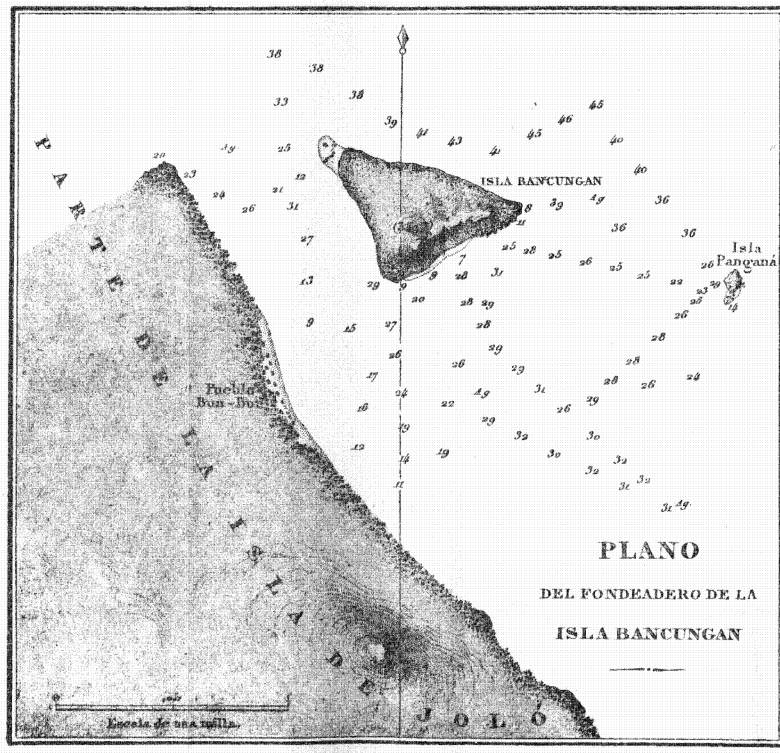
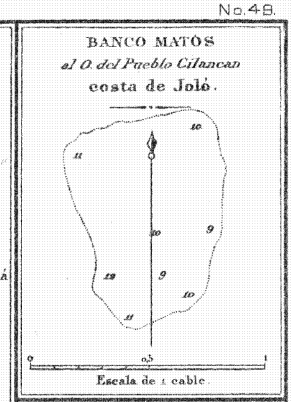
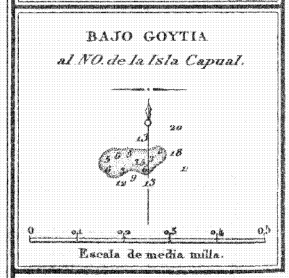
No. 48.


PARTE DE LA ISLA DE JOLÓ
ISLA BANCUNGAN
Isla Panganá
Pueblo Bun-Bun
Escala de una milla.
PLANO
DEL FONDEADERO DE LA
ISLA BANCUNGAN


BANCO MATÓS
al O. del Pueblo Cilancan
costa de Joló.
Escala de 1 cable.


BAJO GOYTIA
al NO. de la Isla Capual.
Escala de media milla.

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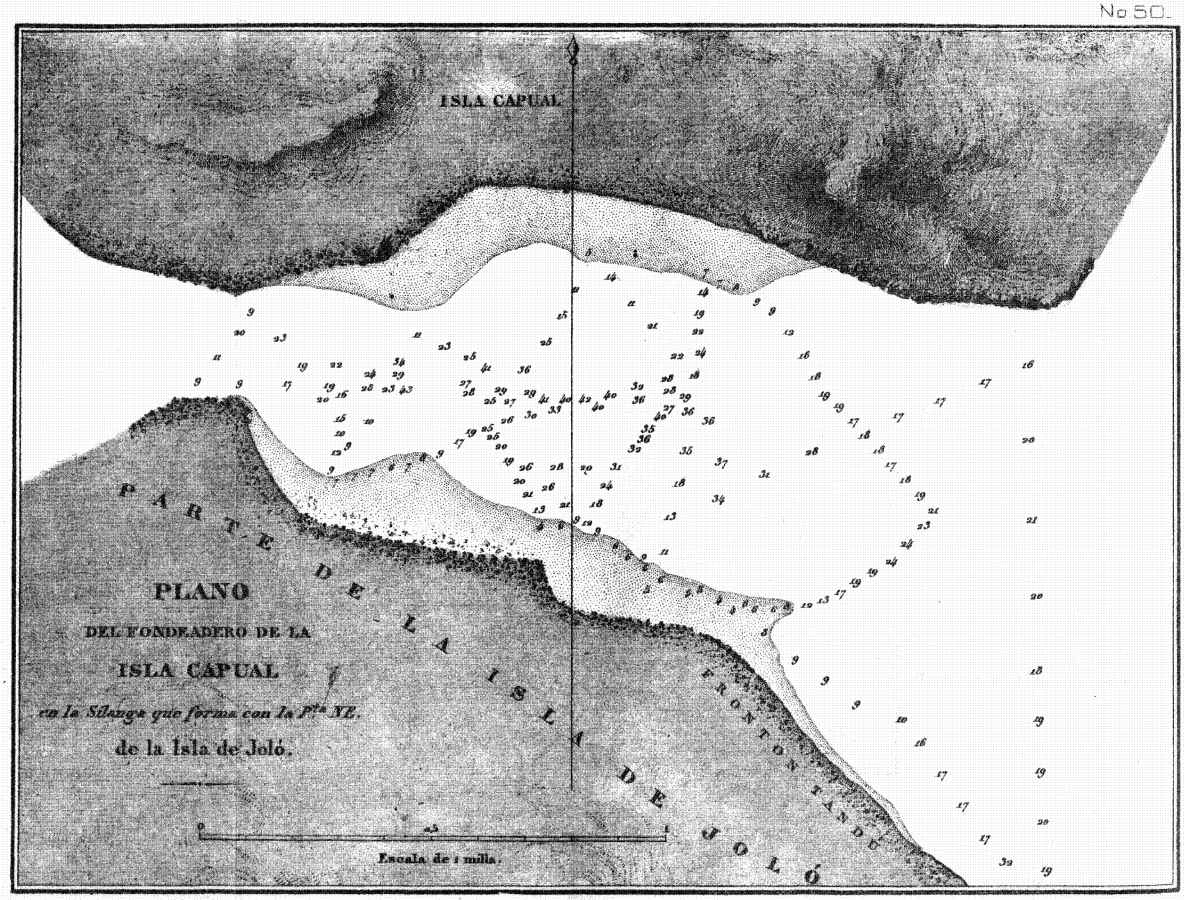
No. 50.


ISLA CAPUAL.
PARTE DE LA ISLA DE JOLÓ
FRONTON TANDU
PLANO
DEL FONDEADERO DE LA
ISLA CAPUAL
en la Silueta que forma con la Pta. NE.
de la Isla de Joló.
Escala de 1 milla.

THE SULTANSHIP OF JOLÓ.

The Joló Archipelago, formed of some 160 islands, is situated southwest of Mindanao and south of Basilan. It is bounded on the south by the Joló Sea, on the northeast by Mindanao, and on the west and southwest by Borneo. The small islands are covered with mangroves, while the large ones have thick forests of good timber, and the natives raise rice, maize, and various alimentary roots, ambergris being found on the coasts. The principal island, called Sulú, or Joló (ch. 47, 48, 49, 50, p. 285), is occupied in a military way by Spanish forces, whose chief, or governor, resides in the old capital, which has well-constructed and armed forts, a pier, etc. By royal decree of November 13, 1877, the sultanship was transformed into a civico-military government. The population consists of 500 aborigines, 612 Chinese traders, and 16,000 negroes.

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